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THE YEAR BOOK

OF THE

NOSE, THROAT AND EAR

THE NOSE AND THROAT

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THE EAR

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PREFACE.

In the following pages the editors trust that a fair presentation of the progress in nose, throat and ear work for the past year is given. Many articles have not been referred to, either for the reason that they have contributed nothing to the progress of our department, or else as more generally the case, being well written statements of the accepted opinions on given subjects written for the general practitioner were not suitable for abstracting. Again, some articles by able workers touch on so many points and are of such importance that abstracting is not possible, all such are, however, mentioned under the proper heading so that those interested may readily refer to them.

While some subjects have been given more space than their importance would seem to entitle them to, it is because such subjects have occupied a prominent place in the literature of the year, whereas a subject of perhaps greater importance has scarcely been mentioned during the same period.

The editors again acknowledge their indebtedness to the abstract editors of the several special and general journals. While doing a large share of original work they have gladly availed themselves of these abstracts in many instances.

They indulge the hope that the Year Book may receive sufficient support to warrant a liberal expenditure for collaborate work in the near future, thus enabling them to bring the work from the foreign journals down to a more recent date than they can possibly do while depending on the abstract work of the different journals.

THE NOSE AND THROAT.

The year has been productive of at least the usual amount of literature in this department. The special journals and the higher class general journals are showing a higher grade of writing, the sophomoric efforts which very recently found a place even in the special journals being nearly completely crowded out now by articles of value from original investigators and observers. Of new text books there have appeared during the year, E. L. Shurly's "Diseases of the Nose and Throat"; J. Price-Brown's "Diseases of the Nose and Throat"; W. L. Ballenger and A. G. Wippert's "The Eye, Ear, Nose and Throat, a Pocket Text Book." H. H. Curtis presented a translation into English of E. P. Friedrich's *Rhinologie, Laryngologie, und Otologie in Ihrer Bedeutung für die Allgemeine Medizin.*"

Besides these there have been new editions of McBride's "The Throat, Nose and Ear"; Ingals' "Diseases of the Chest, Throat and Nasal Cavities"; and Kyle's "Diseases of the Nose and Throat."

In Europe have been published, J. Sendziak's "Choroby jamy ustnej gardzieli i przetyku," (Diseases of the Mouth, the Pharynx, and the Esophagus); Holger Mygind's "De øverste Luftveies Sygdomme." (The Diseases of the Upper Air Passages), and Ramón de la Sota y Lastra, of Seville's, *Theoretische und praktisches Handbuch der Nasenkrankheiten*. A monograph by Paul Viollet, *Resherches sur les moyens de défense de l'organisme contre l'infection respiratoire au niveau des fosses nasales*. Leucocytose. Phagocytose, is also worthy of mention.

NOSE.

Pathology.—H. Cordes (5 Bd. X. H. I.) after a careful investigation of the epithelial buds first demonstrated by Zarniko, and described by N. Boenninghaus as independent glands in the nasal epithelium, reaches the following conclusions: (1) The budlike structures which are occasionally found in the hypertrophic epithelium of the nasal mucous membrane should not be regarded as independent mucous glands. (2) They are related rather to the normal mucous glands and are produced by mucous metamorphosis of the cells which surround the duct in the epithelium. (3) Owing to the often oblique course of the duct beneath the epithelium and the infrequency of demonstration in a single section of the connection between the duct and buds these structures can produce the impression of pure epithelial structures.

Bacteria.—St. Clair Thomson (2, Aug.) as a general conclusion in regard to nasal bacteria says, that considering the large quantity of dust-laden and germ-carrying air which passes hourly into the nasal fossae, they are remarkably free from microorganisms. While some investigators find organisms in every nose, others find none in the majority of healthy noses, the difference probably being due to the thoroughness of the swabbing in the nose. All agree that the vestibule swarms with bacteria. The ciliated epithelium is undoubtedly active in sweeping intruding matters out of the nose and the trickling mucus is also effective mechanically at least. Some claim decided germicidal power for nasal mucus, others that it has an inhibitory effect on germ growth, while still others hold that it affords simply an unfavorable medium for their development. The article is largely a

The numbers in parenthesis refer to the journal from which the quotation is taken, the capital letters to medical societies. The complete list appears at the end of the book and on the loose sheet inserted.

criticism of Paul Viollet who (Thèse de Paris, 1900) asserts that the elements of mucus, and chiefly the leucocytes, are without doubt the only active agents in the defence of the organism against nasal infection.

P. Viollet (abst. 139, Sept.) inoculated guinea-pigs in the nose with tubercle bacilli, causing their death 4 or 5 weeks later with tuberculosis. As he found tubercle bacilli in the nasal mucus he concludes that this shows its bactericidal power to be small.

E. Wertheim (128, Vol. 28, p. 272) secured numerous colonies of cocci and bacilli from the nasal mucus of healthy individuals after disinfection of the vestibule. The complications after intranasal operation may develop as the result of local invasion of microbes, or from general invasion, (a) through lymph paths, (b) through the circulation.

Hands and instruments should be aseptic.

Acute Rhinitis.—W. S. Fowler (97, Jan.) says that in an unselected series of 100 cases of acute rhinitis 76 showed unmistakable constitutional origin; 6 were due to external local irritations; 16 were probably due to contagion. Treatment directed according to etiology is the most successful.

Operation.—C. Seiler (68, Oct. 27) advises preliminary treatment in prospective nasal operations for several weeks before operating. Tell the patient exactly how much salt to use in water (a level teaspoonful in one pint of water). This should be drawn through the nose from a cup or glass by an effort of inspiration. For office treatment S. gets best results from iodine 8 grains, glycerine $\frac{1}{2}$ ounce, pot. iodid 24 grains applied to the nasal and post nasal cavities on a pledget of cotton three times a week.

R. C. Myles (136, 1899) relates several cases of severe nasal and pharyngeal *hemorrhage* following operations, with the measures used to control the same. In the discussion following the paper (D) G. L. Richards, J. A. Kenefick, J. F. McKernon, C. W. Richardson, H. W. Loeb, E. Friden-

berg, Price Brown, D. B. Kyle and J. A. Thompson give quite extended experiences on the subject. The suggestions given by all are very valuable. The general feeling seemed to be that all cases of operation on the nose or throat should be more carefully watched by attendants than is generally done.

G. V. Woollen (7, Dec. 30, '99) gives the indications for intranasal operation and concludes by saying that the decision must rest upon the needs of the individual patient, since not every spur needs removing nor all hypertrophied turbinates cauterizing.

Hypertrophic Rhinitis.—C. R. Holmes (6, Sept. 29, Oct. 6) reports on 1,500 operations for hypertrophy of the turbinated bodies.

At first his treatment was largely by caustics, then a greater use of the galvano-cautery and snare. Good results followed this treatment but the relief was not permanent, the obstruction returning in 1 or 2 years. Finally H. determined to produce a bone scar which would give permanent patency of the lower meatus. To do this he uses a very narrow saw which may be readily turned while sawing, finishing with Beckman's scissors after sawing through the bone. The soft tissue which escapes the scissors posteriorly is reached with the snare. Too much of the turbinated body must not be destroyed. The patient is required to rest two to four days after such an operation and no packing is used, except in severe primary or secondary hemorrhage.

H. uses 5 per cent cocain for anesthesia, packing the nostril with cotton saturated with the solution.

Hypertrophy of the middle turbinate to such a degree as to require operation is quite infrequent as compared with the inferior turbinate. He uses the snare for soft hypertrophies, using his curved scissors for removal of the bone when necessary. The direction of the air-current as demonstrated by Scheff is illustrated, showing the air to pass directly to the upper meatus. A very extended bibliography is appended.

J. A. Stucky (7, Oct. 14, '99) uses Holmes' scissors for removal of part or the whole of the middle turbinate. For the

inferior turbinate he uses a small scalpel, straight scissors and if necessary a saw.

E. H. Griffin, New York, (6, Feb. 24) advocates removal of enough of the inferior turbinate to give free respiration through the inferior meatus in all cases where shrinking of the soft tissues with cocain and suprarenal does not show abundant breathing space. He uses a saw and is careful to include the posterior as well as the anterior portion of the bone. He prefers absorbent cotton for packing after operation, believing he gets less oozing of blood than from gauze. He has done this operation in chronic cases of polypi with apparently permanent relief, the polypi ceasing to recur. His experience includes more than a thousand cases of the operation, in which the results were highly satisfactory, and in no case did dryness or atrophy result. Several illustrative cases are cited.

L. Rethi (Deutsche Aërzte Zeit., Feb.) treats large diffuse hypertrophies with trichloracetic or chromic acid, nitrate of silver or galvano-cautery.

Stetter (19, No. 4) uses a very fine galvano-cautery needle submucously, close to the bone.

L. Polyák (abst. 139, Oct.) makes a sharp distinction between true hypertrophy of the inferior turbinate and intumescence thereof. The former he considers incurable save by operation and prefers the cold snare, scissors, or knife to the slower methods. In the discussion Zwillinger, Donogány and Némái declared the galvano-cautery efficient for the cure of such conditions. Morelli thought astringents and dilatation best to begin with, surgical interference later if necessary.

C. C. Rice (70, Apr. 28) gives some of the reasons why nasal surgery has become more conservative than formerly. Habits and manner of living has much to do with ordinary rhinitis and should be properly regulated as the first measure in treatment. R. considers that hypertrophy of the posterior ends of the turbinates is usually dependent on septal irregularity and is cured by correcting the latter.

A. Bock (80, Nov. 6, '99) presents the advantages of *elec-*

trolysis in the treatment of diseases of the nose, they are, the slight pain, freedom from bleeding and disagreeable after effects, non-interference with the patient's occupation, and healing without perforation and infection.

Neumann (166, Apr. 21) discusses the treatment of chronic rhinitis, giving the usual objections to the douche. He uses a 2 per cent solution of menthol in liquid vaselin, having the patient pour a few drops into each side while lying down and then inserting a tampon moistened with the solution and allowing to remain 20 minutes.

Rhinitis in Children.—E. C. Aviragnet (82, Dec. 20, '99) cites four cases of his own to sustain his belief that gastro-intestinal disorders of obstinate character often exist in children as the effect of chronic rhino-pharyngitis. Treatment of the latter will cure the former after failure with treatment directed to the stomach and bowels alone. His treatment consists of nasal irrigation followed by injection of a 5 per cent solution of resorcin in olive oil. The latter is used with the child lying on its back, $\frac{1}{2}$ c.c. being allowed to run through the nose and into the nasopharynx.

Coryza.—Mounier (abst. 2, Nov.) calls attention to auto-intoxication as a cause of *periodic* and *aperiodic* coryza and cites cases. Simple dieting will cure many cases. Indications for surgical interference in the nose are not to be neglected, however.

A. Jacobson, St. Petersburg, (105, Aug. 11) considers the various varieties of *spasmodic rhinitis*, of which hay fever is only one, but the best established one. Some cases of spasmodic rhinitis are vaso-motor paralyses, some are caused by intoxication and auto-intoxication and should be termed toxirhinitis.

Gaston (248, Oct. '99) considers the coryza of the *syphilitic infant* as not only serious as a symptom of the disease, but also dangerous in itself on account of the nasal occlusion; consequently local treatment as well as general should be given.

Fermi (13, Oct. 2) made 400 attempts at *inoculating* and *transmitting* coryza to healthy individuals, using the nasal and

buccal secretions from 60 different patients affected with coryza. In no case did transmission occur. The same failure followed 40 attempts at inoculation with influenza.

C. Kisskalt (13, Jan. 23) from an investigation of the question of *taking cold* arrives at the following conclusions: 1. Arterial hyperemia increases the predisposition to disease. 2. Such increased predisposition through arterial hyperemia of the internal organs, including the mucous membranes of the air-passages, is caused by exposure to cold and the consequent contraction of the cutaneous vessels. 3. In hardening against cold a condition of the skin results in which the bloodvessels do not react so promptly to cold, with consequent lessening of internal hyperemia.

Membranous Rhinitis.—Yonge (118, Dec. '99) concludes that membranous rhinitis (not including primary nasal diphtheria) is commoner than usually supposed; that the appearance and course may be the same whether or not the K. L. bacillus be present, the latter being more often present than absent; that since the two forms of the disease are clinically indistinguishable the patient should be isolated until a bacteriologic examination is made.

H. Reichenbach (222, No. 38, '99) reports a case in which the diphtheria bacillus was found and after discussion of the question concludes as does Yonge in regard to isolation.

Chauveau (161, July '99) reports a *fatal case* of fibrinous rhinitis. Pneumococci and staphylococci were found. Tuberculous meningitis developed.

Niel (Thèse de Bordeaux, 1899) finds the *aspergillus fumigatus* the most frequent of the numerous varieties of the *aspergillus*. It is oftener found in animals than in men. In man it does not cause pain in the nose, but shows itself by a clear discharge of a peculiar odor and the formation of a grayish-green membrane. Prognosis is favorable. Treatment consists in removal of the membrane and washing the nose with antiseptic solutions.

Vestibule.—M. Bresgen (216, Jan. 15) discusses the subject

of vestibular disease. He thinks the cracks and fissures at the edge of the nose and on the lips so often seen following acute or chronic catarrhs, renders the individual peculiarly liable to lupus of these parts, the moist and irritated surface giving lodgment to the tubercle bacilli.

Atrophic Rhinitis.—This disease has been the subject of many articles during the year, but no especially important discoveries have been announced. The believers in the bacteriologic origin of the disease have been quite active in contrast with the work of last year.

Pathology.—F. Siebenmann (abst. I, Sept.) considers the characteristic atrophy of the turbinal bones to be due to lacunar resorption, while the metaplasia of the mucous membranes consists in conversion of the cylindrical into squamous epithelium. In severe cases the membrane becomes epidermis-like, the glandular epithelium atrophies and the efferent ducts are widened. The cavernous tissue loses its muscular elements. While these changes may occur in narrow-nosed individuals, the genuine *ozena* is nearly always confined to individuals with broad, low noses.

S. thinks that as to treatment, painstaking cleanliness will accomplish all that we can hope for.

Etiology.—R. Kayser (216, Jan. 15) takes up the question of the influence of nasal diseases on facial expression. He considers *platyrrhinia* the form of nose most favorable to the development of *ozena*.

G. Martuscelli (63, July '99) makes two classes of this disease, the one not being a disease *sui generis*, but dependent on other disease processes in the nose, such as accessory sinus disease, foreign bodies, etc. In this form various bacteria are found having no etiological relation to the disease. The other class which he calls *rhinitis caseosa vera*, is an independent disease with a constant bacteriologic finding. This germ, described by Cohn in 1874, as *streptothrix alba*, and by various authors under other names, is the probable cause of the disease.

de Simoní (Il Policlinico, A. 6, '99) investigated 32 cases with reference to the *bacteriology*. In the secretion he constantly found the diplococcus of Fraenkel, streptococci and pyogenic staphylococci as well as the nonpathogenic capsule bacillus and pseudo-diphtheria bacillus.

S. made pure cultures of these various bacteria and introduced them singly and in association into the nostrils of healthy individuals without producing the disease. He also found them in nasal cavities where there was no ozena and he concludes that none of these germs has any etiologic significance. He further concludes that having thus excluded the infective character of ozena, we must admit that this process originates from an anatomic lesion of the nasal mucosa, which permits the multiplication of germs which may be found in the normal nasal mucus.

Meslay and S. Viollet (abst. 2, Jan.) in four cases found the *pneumo-bacillus* in the nasal mucus. The same bacillus was found in the secretion from a purulent otitis secondary to the nasal inflammation.

F. Perez (233, Dec. 25, '99) isolated a hitherto undescribed *cocco-bacillus* from cases of fetid atrophic rhinitis, which is pathogenic to small animals. Inoculated in the ear of rabbits, an intense nasal secretion is produced, invariably resulting in atrophy of the turbinate bones. He obtained the germ seven times out of eleven cases of fetid ozena and in one of eleven cases of the non-fetid variety. The most characteristic feature of the bacillus is its fetid odor in cultures.

Hebert (abst. 139, July) by experiments shows that the ozena germ secretes a *soluble poison* which is toxic to guinea-pigs.

G. Masini (281, Jan.) reports a case which he considers as a disease sui generis whose special pathogenic agent is the *streptothrix albus*. He has seen the same germ in previous cases.

G. Paul (abst. 2, June) supports Jacques in the belief that ozena is *not a disease*, but merely a symptom, the ozena having as its invariable cause a focal suppuration in the nose, usually in the accessory cavities.

On the other hand Mlle. de Robineau (Thèse de Paris,

1899) finds a *specific microbe of ozena*, a poly-morphous bacillus, immobile, sporeless, and not staining by Gram. She found this in the nasal mucus of ozenous cases in almost pure culture. It strongly resembles Friedlander's bacillus and R. considers it to differ only in its slighter pyogenic action.

J. E. Logan, Kansas City, (6, Sept. 1) discusses the etiology of this disease, considering the four causes usually assigned. 1. Hypertrophy, cutting off the blood supply by pressure. 2. Chronic suppurative rhinitis in children. 3. Bacterial causation. 4. Sinus disease. He could find little to support either of the first three and was inclined to accept the fourth as more nearly corresponding with his experience. L. makes a strong point for this theory in his statement, "I cannot understand how this membrane, robbed of its epithelium, stripped of its glandular tissue, practically devoid of its blood supply, except through minute channels, could maintain the excessive secretion exhibited in these nostrils." L. states that he has seen the atrophic process established in the middle turbinate while the inferior turbinate of the same side showed little involvement. He has cured several cases by opening and curetting the ethmoid cells.

In the discussion (2, June) (Am. Laryng. Assoc.) F. C. Cobb had observed, in his ethmoid cases, marked atrophy on the side of the sinus disease, and in persistent sinus disease he had noted a steadily increasing atrophy of the intra-nasal structures. J. Wright had not found the close connection between atrophic rhinitis and sinus disease claimed by Grünwald and others. In his own experience the inferior and not the middle turbinate was primarily attacked. He attached much importance to the views of Cholewa and Cordes, who thought the process the result of a rarefying osteitis, commencing with bony hypertrophy. [See Year Book for 1900, page 19.] He did not believe that any one cause could account for every case; 75 per cent of his cases were in women. W. E. Casselberry called attention to the associated atrophy of the adjacent parts and thought this was strongly suggestive of a *trophoneurosis*.

J. W. Farlow (6, Sept. 29) had a case of ozena in a woman

of 21 which seemed to be due to *sphenoid disease*. The discharge was a typical one, from the left side, and there was marked atrophy of the intra-nasal structure. Syringing with peroxide of hydrogen and alkaline antiseptics and later curetting practically relieved all the symptoms.

Nöbel and Löhnberg (80, Mar. 26) were able to demonstrate empyema of one or more of the accessory cavities in 79 out of 111 typical cases of *ozena* in which crusts, fetor and atrophy were present. They conclude as follows in regard to the etiology and treatment: (1) By far the greater number of cases of *ozena* are due to *sphenoid* and *ethmoid* disease. (2) Fetor, atrophy and crust formation due to *pus* in the nose, may follow a number of causes, but as a rule are referable to *purulent foci* in the *sphenoid* and *ethmoid*. Hence the rational treatment in a large proportion of cases is surgical.

G. T. Ross (170, Aug.) alludes to the importance of differentiating between atrophic rhinitis and simple functional collapse. The latter is rarely seen before adult life, while the former is frequent in childhood. The crusts and muco-purulent secretion of atrophic rhinitis are abundant while the secretion in functional collapse is very small.

R. McKinney, Memphis, (6, June 30) reports two cases to illustrate his belief that *chronic purulent rhinitis* of childhood is the cause of some cases at least of atrophic rhinitis. The cases were two brothers, nine and seven years old. The older one gave a history of chronic purulent rhinitis dating back several years, and exhibited an advanced stage of atrophic rhinitis. In the younger brother the purulent catarrh was still active and the atrophy only just beginning. Neither of the boys showed adenoids, thus contradicting the theory of some that purulent rhinitis in childhood is due to these growths.

In a symposium on this subject (C) (1, May) Bosworth reiterated his teaching of twenty years "that atrophic rhinitis is a development from the purulent rhinitis of childhood." He also stated that "there is not a single clinical case on record that justified the assertion that atrophic rhinitis ever follows hyper-

trophy of the mucous membrane." [A review of the literature of the subject year by year shows B. to stand almost alone in his first statement, and clinical experience controverts the absoluteness of the second.]

Jonathan Wright discussed the recent literature on the etiology and pathology. He quotes Meisser's conclusion that "for the advent of rhinitis atrophica there must be chiefly at work two factors, viz.: 1. Epithelial metamorphosis of the nasal mucous membrane. 2. Chamae-prosopia, *i. e.*, wide nasal fossae."

W. also quotes Gerber's conclusions: 1. A true rhinitis atrophica fetida will always be found where there can be shown to exist a retarded development of the nasal framework in combination with epithelial metaplasia and certain retrogressive processes of the mucous membrane. 2. This type of nose will, in the majority of cases, be found in natural connection with corresponding facial skull forms (chamae-prosopia, platyrrhinia). In other cases it may be brought about through pathologic processes, especially by hereditary syphilis. 3. Exceptionally the connection of epithelial metaplasia with wideness of the nasal chambers, due to other causes, may give rise to the disease.

W. calls attention to the little significance attached to bacterial factors in the recent writings on the subject.

C. C. Rice considered the matter of the importance of distinguishing functional collapse of the nasal tissues from atrophic rhinitis. The former condition is very likely to arise in the anemic, in those working in dusty rooms and in those whose general hygienic surroundings are bad, and there may be a considerable crust formation. The diagnosis is to be made by the absence of all the symptoms of the atrophic disease save the shrinking of the soft tissues and the crust formation.

The question of diagnosis is an important one from the standpoint of treatment and prognosis, the functional disease being very amenable to treatment.

Treatment.—T. R. French took up the *hygienic and general treatment*. In a large number of patients the general health is

bad and constitutional treatment is required. The usual tonics are suggested.

D. B. Delavan's paper was on the *mechanical treatment* of the disease, the Gottstein tampon method being most commonly resorted to. The importance of the removal of obstructions as a preventive measure is alluded to.

C. H. Knight considered the subject of *local medication*. Solutions rather than powders should be used. After cleansing with normal salt solution the medicine is to be applied. Menthol in oil, 5 grains or more to the ounce, is a valuable remedy. Formaldehyde, 1 to 5,000, is of service as a disinfectant, but may be very irritating. Ichthyol is commended, as also a preparation called Gomenol, a product of distillation of the leaves of "*Mela-leuca Viridiflora*," a tree found in New Caledonia.

In the discussion following, Van Zandt, of Philadelphia, thought the disease could be explained in most instances from an inflammatory and bacteriologic point of view. Coyle, after thorough cleansing, inserted plugs of gauze which were allowed to remain 24 to 36 hours and gave better results than any of the medicines mentioned. R. C. Myles supported Bosworth's views as to etiology. Ichthyol, 15 to 25 per cent in vaseline, was the best remedy in his hands. E. Mayer thought it quite possible for atrophic rhinitis to follow as a direct consequence of the acute diseases of childhood. With Van Zandt's hot air apparatus he secured the best results in the way of cleansing the nasal passages. W. C. Phillips commended ichthyol in 25 to 50 per cent solution.

H. B. Douglass, New York, (89, June) attends to the removal of crusts in the office every second day at least and every day if possible. After thorough cleansing D. applies large cotton pledges saturated with a 10 to 20 per cent watery solution of ichthyol and lets the patient wait in the outer office 15 to 30 minutes before removal. After removal oily sprays are used. If there be ulceration or excessive atrophy the ichthyol is used pure and rubbed in for four or five minutes. For home treatment, when office treatment is not given, the patient is instructed to introduce a bean-sized piece of an ointment containing 40 grains of ichthyol

and 5 grains of menthol to the ounce of vaselin each night after careful cleansing.

Bruck (249, 74, '99) treats with the *permanent tamponade*. Strips of absorbent gauze are placed in the nose and thus draining and irritating the nasal fossae day and night the formation of crusts and consequent fetor is prevented.

F. Klemperer (232, Aug.) cleanses with tepid salt solution and *tampons* each nostril in turn for all night. He also tampons both an hour or so preceding the cleansing.

D. B. Kyle (49, March) in pronounced atrophic rhinitis uses a 1 to 500 solution of *mustard oil*. If this gives no discomfort the strength is increased to 2, 3 or even 4 to 500. If the stronger solution causes no pain one may consider the atrophy complete and recovery impossible. Internally K. uses phosphorus and iodine.

P. Borrás y Torres (220, March 31) used normal horse serum in the treatment of eight cases of ozena. In addition to the general symptoms, fever, joint pains, etc., and pain and swelling at the point of injection, the nasal mucous membrane showed marked turgescence and increased secretion. The crusts and odor were dispelled after four or five injections, but the improvement only continued during the active treatment and there was no change in the atrophied mucous membrane.

L. S. Somers (16, Mar.) finds *citric acid* very valuable in destroying the odor and hindering crust formation, but finds it of value only in connection with most careful cleansing treatment. He uses a powder containing 25 per cent of citric acid and 75 per cent sugar of milk instead of the 50 per cent powder recommended by Hamm, the latter being too painful. The powder may be placed in the patient's hands for daily insufflation.

Ferrari (abst. 139, July) recommends as a local application in ozena: creosote 5.0, alcohol (70 per cent) 10.0, glycerin 40.0.

E. Baumgarten (14, Aug., '99) finds Phenol-natro-sulforicinicum (a mixture of phenol and sulpho-ricinate of sodium) very valuable in atrophic rhinitis, but of no benefit in other conditions of the nose and throat. In atrophic rhinitis he uses a 30

per cent solution in water, relieving the odor and rendering cleansing much easier. The application is painless.

Complications.—W. Permewan (146, July, '99) had a patient, a man of 45, who had *fever* for some weeks without evident cause, the temperature running from 100° to 103°. Examination revealed an atrophic rhinitis with fetid crusts in nose and naso-pharynx. Cleansing and disinfecting the nasal cavities reduced the temperature to normal permanently, with a general improvement of health.

Desimoni (abst. 139, No. 10) had two cases of ozena which were complicated with attacks of *epilepsy*, the attacks being worse when the catarrh was aggravated. Treatment directed to the nose—cleansing with permanganate of potassium solution and applying a mixture of creosote 1 part, glycerin 4 parts—caused entire disappearance of the epilepsy. A Fraenkel diplococcus was found in the secretions which was rapidly fatal to guinea-pigs, although the latter are as a rule very refractory to diplococci.

Obstruction.—Cousteau (abst. 2, Nov.) by certain experiments shows that *emphysema of the lungs* may result from nasal obstruction. In young rabbits, one nostril was obliterated and the animals killed seven months later showed conclusive evidence of pulmonary emphysema.

R. Kafemann (5 B. 10 H. 3) by a series of laboratory experiments tried to determine the effect of *artificial nasal obstruction* upon the mental capacity. He applied an obturator on alternate days in such a way as to cause no local irritation and cause only partial nasal obstruction. In this way he determined that on the obstructed days the selective capability and also the ability to retain impressions were lessened.

In a discussion on the subject of intranasal treatment in ear disease (2, Sept.) before the Section of Laryngology and Otolology of the British Medical Association, in which P. McBride, C. Baber, D. Grant, Scanes Spicer, H. Tilley, J. Horne, W. Williams, R. Lake, H. H. Curtis and H. Pegler took part, the weight of opinion was that nasal obstruction might or might

not be the cause of ear disease and that to determine in advance what class of cases would or would not be helped by nasal treatment and to be governed accordingly would save much disappointment and reputation. As a general class it was thought that the cases of dry catarrh or sclerosis of the middle ear were least likely to be influenced by removal of moderate nasal obstruction.

F. R. Reynolds, Eau Claire, (42, Jan. 25) gives a good presentation of this subject with the approved methods of relief.

L. H. Pegler (2, Dec.) presents a very good paper on the *surgical treatment* of nasal *stenosis*. Constriction of the limen vestibuli by Roughton's band he has found no satisfactory operation for, temporary dilation with an expander of some kind being the best means of relief. Displacement of the lower anterior border of the triangular cartilage or the mesial crus of the lower lateral cartilage (P. does not recognize a "columnar cartilage") or both is remedied by dissecting out the displaced portion and severing it from its attachment to the main body. He does not favor turbinectomy except in very rare instances and does only an anterior turbinotomy usually when removal of any portion of the inferior turbinated seems necessary. For septal thickenings and deviations he prefers the Bosworth method, finding that even in marked deviations sufficient space may be gained in this way. He does not hesitate to sacrifice the entire thickness of the septum down to the mucous membrane and periosteum of the concave side in severe cases, the part thus left being sufficient usually to consolidate by formation of new material. A perforation is to be avoided, but is not specially detrimental and in some cases is decidedly beneficial. Within reasonable limits the age of the patient is not allowed to interfere with operations, the results in children being good.

Scanes Spicer (9, Aug. 9) believes that *slight obstructions* in the nasal passages and particularly periodical obstructions are more serious in their effects on the ears and nasopharynx than are complete obstructions to nasal breathing.

W. C. Krauss (46, Jan.) thinks *meningitis* not infrequently due to infection from the nasal chambers.

L. Chauveau (186, Apr. 8) thus classifies the nasal causes of *difficult breathing in infants*: Superficial lesions at the nasal orifices; acute coryza; coryza in the eruptive fevers; pseudo-membranous coryzas; those produced by foreign bodies; syphilitic coryza; adenoid vegetations; retropharyngeal abscesses; and congenital occlusions.

Lim Boon Keng (41, Oct., '99) removed a *leech* from a man's nose, which had slipped in while the man was bathing, and remained three months as an obstruction before relief was sought. A. F. Manasseh (6, Oct. 9, '99) relates a case of *severe epistaxis* in a boy, caused by a *leech* in the nose. The patient lived in the region of Beyrout, where similar cases are occasionally reported.

Seiler (71, Nov., '99) reports a case of apparent *congenital eburnification* of the superior maxilla in a woman of 23 with complete bony stenosis of both nasal passages. The patient had never been able to breathe through the nose and had never been able to perceive any smell. S. removed a bony mass weighing two ounces, with no recurrence one year later.

Choanal Occlusion.—J. Morf (5, B. X., H.I.) opposes Koerner and Waldow in their contention that anomalies of growth and shape of the upper jaw and nasal framework are due to impeded nasal breathing. M. quotes from E. Fränkel and Siebenmann and Grossheintz to support his view. He records a case of congenital choanal occlusion of the left naris in a healthy man of 43 who had a high arched palate (Hypsistaphily), but M. quotes H. Haag's (127, B. IX, H. 1, 1899) estimate that 28.6 per cent of all cases of congenital choanal atresia present a normal palate. Siebenmann and Grossheintz conclude (quoted by Morf) that the high, small palate is usually associated with a small upper facial structure, small nasal fossae and small orbits, and that the whole depends rather on racial peculiarity than on any effect of nasal stenosis.

H. Haag, Bern, (loc. cit.) in three cases of congenital choanal

atresia found marked hypsistaphily, but an examination of fifty cases in literature showed that 28.6 per cent had normal palates, and in his own cases the hypsistaphily seemed to be only a part of the general leptoprosopia. In Haag's cases and in Morf's case the sense of smell, which was absent before operation, was fully restored with nasal respiration. In H.'s cases the hearing was normal, the complete nasal occlusion having had no evil effect on the ear. In operating, H. found that by removing a portion of the posterior extremity of the septum the necessity for long-continued after-treatment by bougies was avoided.

In a case in a 12-year-old girl, reported by Ullmann, Greifswald, (abst. 139, Aug.) there was some middle-ear catarrh and also slight chronic pharyngitis and laryngitis.

Crull, of Rostock, (ibid.) describes a case of left-sided choanal atresia, in which he thinks likely the cause was an intra-uterine inflammation.

E. D. Capps (abst. 1, Feb.) reports a case in a woman of 30, in whom the post-nasal space was occluded by a bony growth extending from the hard palate and attached firmly to the base of the occipital bone. The soft palate was also adherent to the pharyngeal wall throughout most of its extent. An operation with chisel and curette was successful. C. thought the case of congenital origin.

Flatau (15, No. 40, '99) reports such a case, in which he resected the inferior turbinated and used the chisel and hammer to remove the bony occlusion.

Synechia.—Price-Brown (1, Sept.) discusses quite fully the subject of *nasal and post-nasal* synechia. While most often due to operative interference, they are by no means always thus caused, some being doubtless congenital and others the result of nasal hypertrophies, while the synechia of the nasopharynx are most generally due to adhesions of the enlarged pharyngeal tonsil to the lips of the Eustachian eminence. These latter are not in most cases post operative. The usual means of treatment are given. B. uses pledgets of cotton soaked in albolene to separate the wounded parts after breaking up the synechia and finds that

such a pledget may remain several days without becoming offensive.

In the discussion of this paper (Soc. D.) (1, Sept.) some good words were spoken for the much-maligned galvano-cautery, which was also defended in the paper.

M. D. Lederman (1, Nov.) read a good paper on the same subject. He *reduces the nasal congestion* as much as possible by preliminary treatment before destroying the synechia.

Rhinoplasty.—P. Berger, Paris, (276, Sept., '99) exhibited several patients before the Académie de Méd. on whom he had operated by the Italian method with satisfactory results. The arm must remain fixed at least eight days and the treatment is chiefly available for children and young people on account of the exhaustion from the long fixation.

M. M. Kuznetsoff (22, Feb. 12) reports two operations for saddle-nose after J. Israel's method. The two steps are: The transplantation under the skin of the nose of a piece of bone chiseled from the tibia; (2) a modified Italian rhinoplasty.

Berger (82, Feb. 28), finding Martin's metallic support in complete rhinoplasty unsatisfactory on account of the frequency of deep suppuration, suggested that the metallic support should be included between two layers of tissue. Vantrín used this method with success, and B. here reports a successful case of his own. The external nose was completely destroyed by disease. Two lateral flaps taken from the face were brought together in the median line with the raw surface outward; a third flap was taken from the forehead and turned downward with the raw surface inward. Between these two layers a platinum support was placed. Union occurred by first intention with fair results esthetically. The platinum support is well tolerated.

Nelaton (82, June 23) alludes to the failure of the Italian, Indian and French methods where there is loss of bone; and the suppuration likely to follow metallic supports. He then presents a new method in which osseous support is obtained by cutting a horse-shoe flap including all the soft tissues and the outer layer of the frontal bone, any remains of the nasal bones and part of

the nasal processes of the superior maxillary bones. This flap is brought down till its upper edge fits into the root of the nose, and is fixed with sutures. N. has had satisfactory results from this operation.

J. H. Coulter, Chicago, (142, June) writes of the repair of old traumatic nasal deformities and gives illustrations of the results of operation on two cases, which were very fine. An external light metal splint held in place by a head band was used.

D. H. Goodwillie (1, July) (C), in a paper on this subject, describes a number of operations and illustrates by patients. Each case has to be studied and an operation devised to suit it. G. does not think metal frames in the nose are desirable, as they are apt to end in failure, no matter how skillfully inserted. The article should be read, as it does not admit of abstracting.

J. F. McKernon (*ibid.*) has used a modification of the Martin bridge in two cases. In one case sloughing occurred after a year. In the other, six years had elapsed without trouble.

J. B. Roberts, Philadelphia, (17, June 25; July 28) in an article on the correction of deformed noses, gives suggestions as to the mode of procedure in the several varieties. In the saddle-back nose, arising from improper development, a metal or celluloid bridge may be very satisfactory, but he thinks that when it is due to syphilitic necrosis there is too much danger of irritation, and it is better to build up with skin flaps from the cheeks or forehead. The article contains some helpful suggestions as to the manner of using skin flaps.

Fractures.—T. A. DeBlois (6, Oct. 27) believes that broken noses, so-called, are as a rule not really fractured, but that they are rather cases of bony displacement and dislocation. A fracture of the nasal bones or of the nasal process of the superior maxilla might, however, occur. The various causes of injury are considered. Treatment consists in the reduction of the dislocation, a general anesthetic being sometimes necessary. External splints might be avoided in many cases by proper manipulation. For an internal splint, a bit of stiff rubber tubing put into position with a pair of closed, well-greased scissors will often force the

parts into place, although it might be very slow in action. In the discussion (Am. Laryng. Assoc.) Emil Mayer found the rubber splint too irritating, and preferred gutta percha, which could be moulded to suit each case. W. E. Casselberry used an anesthetic and liked the plaster-of-paris external dressing. For the internal splint he used nosophen gauze. J. O. Roe commended a thin metal splint externally with an internal dressing. H. L. Swain and F. C. Cobb got good results without apparatus in cases where they could see the patient often. W. K. Simpson and W. F. Chappell used the Bernays sponge cut to fit the inside of the nose.

G. G. Van Schaick (71, Nov. '99), in cases of considerable comminution in nasal fracture, advises that a long sterilized pin be driven transversely through the nose under the broken bones, the ends being supported by rolls of gauze.

K. Büdinger (14, June 28) recommends suture for cases of longitudinal breaks of the nasal bones complicated by transverse fracture.

Tuberculosis.—N. W. Jones, Chicago, (68, Aug. 25) details the experiments by which he reached the conclusions: First, that virulent *tubercle bacilli* are to be found in the nasal cavities of healthy persons in the ordinary walks of life; and second, they are not found so frequently in these persons as in those who have the care of the tuberculous.

G. Liaras (abst. 2, June) contributes to the study of *tubercular infection through the nose*. He does not find the nasal mucus and the nasal cavity so antiseptic as Würtz and Lermoyez. In an examination of students and nurses in hospitals, the tubercle bacillus was not found in the mucus. He also failed to find it in the coryza of lupus of the face, strumous coryza, or muco-purulent coryza found in pulmonary tuberculosis. Atrophic rhinitis does not seem to give easier access to the bacillus, since the statistics show only two cases of tuberculosis in fifty-two cases of ozena.

Texier and Bar (abst. 2, Nov.) report three cases of *primary tuberculosis* of the nose, making seventy-three cases of which they

could find record in literature. They define three forms of the disease: (1) a pseudo-polypoid form; (2) an ulcerating form; (3) a granular form (Chiari). The local treatment is curettage, followed by 80 per cent lactic acid.

G. Prota (139, Oct.) reports a case of *primary tuberculosis* of the nose with practical recovery.

H. Preysing (297, No. 32) had a case in a patient formerly suffering from bone tuberculosis, but at the time healthy and strong. There were separate tubercular tumors of the septum, showing no bacilli, healing quickly, with tendency to recurrence.

Lupus.—Finsen continues to show good results from the use of the sunlight and electric light in this disease. G. G. Hopkins (17, Oct. 27) gives an account of a visit to Finsen's Institute. The article is illustrated by ten plates, showing the excellent results obtained in lupus of the nose and face.

P. Hellat (22, No. 39, '99) reports a case cured by the galvano-cautery.

Syphilis.—Mounier (81, No. 3) insists that in all doubtful cases of nasal ulceration or tumor, mercurial treatment should be tried, preferably by injection. In a case seen by him, a large endo- and extra-nasal growth, pronounced sarcoma by one specialist and lupus by another, and radical operation advised, was cured by three hypodermics of salicylate of mercury.

R. Levy (3, Aug.) considers this subject from the historic and pathologic standpoints, discusses the symptomatology and treatment and describes three cases illustrating the difficulty often experienced in making a diagnosis of the disease. He treats perforations of the septum by cauterization and the application of an ointment of twenty grains each of calomel and euophen to the ounce of vaselin.

C. P. Linhart (3, Aug.) reports a case of tumor involving the inferior turbinate in which a diagnosis of sarcoma had been made by two surgeons and a pathologist, and the inferior turbinate and part of the middle turbinate removed by a specialist, the latter, however, not considering the growth malignant. A

return of the tumor led to the use of the pot. iodid., with complete relief of all the symptoms.

F. J. Quinlan, New York, (1, Mar.) reports the case of a man, 40 years of age, in whom *inherited syphilis* made its appearance first at the 18th year, then began with sudden soreness of the throat and finally the entire septum was lost. The man afterward contracted chancre.

A. Phillips (118, June) describes a case of *phagedena* in a man of 26, beginning in the roof of the mouth, proceeding upward and destroying rapidly the cartilaginous septum and the entire external nose. Death occurred from sepsis one month from the onset. The patient had contracted syphilis two years before.

Rhinoscleroma.—Rona, Buda-Pesth, (139, Nov.) shows that with reports of twenty-one cases of true rhinoscleroma, Hungary stands fourth in the order of frequency of countries in which the disease originates, the order being, Russia, Austria, Central America, Hungary. In one of his cases there was a high-grade regional inflammation of the lymph glands, which showed, under the microscope, a subacute inflammatory process. The lymph from these glands showed numerous scleroma bacilli. Culture plates inoculated with this lymph, together with blood from surrounding healthy tissue, remained sterile. Examination of the blood showed no changes, and attempts at auto-inoculation showed no results after several months.

P. H. Gerber (5, B. 10, p. 347) in ten cases, saw only one with the typical nasal changes, the others showing the disease in the larynx. Six cases showed the usual subglottic thickening, while in three stenosis was due to infiltration of the false cords. G. considers rhinoscleroma of the air-passages not so rare as is usually thought. He thinks the variations in published cases by different observers is due to the gradual weakening of the diseased virus, which may have some relation to the geographical situation according to the distance from true homes of the disease.

Lehrmann (139, Nov.) reports a case of rhinoscleroma of

the nose and pharynx in a man of 45, who also showed carcinoma of the gums. There was no apparent relation between the two diseases.

E. de Navráil, Buda-Pesth, (abst. 1, Oct.) who has had many cases of this disease, treats it on the same lines that he treats malignant disease—that is, complete extirpation. He removes all the diseased tissues, making, when necessary, plastic operations, taking the anterior frontal plate in order to obtain a bony skeleton for the nose. In rhinoscleroma of the larynx, thyrotomy is done, after previous inferior tracheotomy, and the diseased tissue removed, using Thiersch's grafts to replace the mucosa if much has been removed. He has had no relapses after this radical treatment.

D. Grant (2, July) exhibited (A.) a case in a woman, aged 26, in whom there had been complete obstruction of both nostrils by a reddish growth of almost fibrous consistency. The palate and naso-pharynx were also affected. Scraping and dilating had given temporary relief, but in less than a year the obstruction was again complete. He was now dilating and using pure lactic acid.

Karl Vymola (15, No. 51, '99) reports a case in a 13-year-old boy. The nose was filled with yellowish-green crusts; the alae nasi were of cartilage-like hardness at the base; the nares were reduced to narrow slits by roughened tumors springing from the septum and floor of the nose. The palate and pharyngeal tissues were markedly hyperemic. The glottis was obstructed by masses springing from the false cords and epiglottis. An excised piece showed microscopically the characteristic short rods in capsules. The Honl serum treatment is being tried.

Hellat (54, No. 2) describes a case which had been considered syphilitic at two hospitals, but which was proven to be rhinoscleroma by the microscope. Both nasal passages and the whole nasopharyngeal space were filled, with the exception of the superior meatuses. He is pessimistic as regards treatment.

W. J. Freeman (3, May) reports a case occurring in a native of Russia, 34 years old, resident in the United States for

seven years. The patient first noticed trouble with his nose three years before. Only about six or seven cases have been previously reported in the United States. Nearly all cases reported anywhere may be traced as natives of Russia or Austria. In Central America, however, twenty-three cases, mostly natives, had been reported up to 1895. In Freeman's case the nostrils were almost occluded and the naso-pharynx was invaded. The only symptom complained of was the nasal obstruction. F. considers the disease, its history, appearance, etiology, pathology, etc., very fully.

Simoni (190, Nos. 18, 19, '99) has found in *ozena secretions, encapsulated bacilli* which could be isolated and which were identical with those seen in rhinoscleroma. He was later able to obtain the same bacillus in various nose affections in fifty-eight human beings and eighteen lower animals. Careful investigation leads him to conclude that the Frisch bacillus and the Friedlander pneumobacillus are merely varieties of the same species widely distributed in nature. He declares the Frisch bacillus to be frequently found in both the nasal and laryngeal cavities and is non-pathogenic.

Nasal Reflexes.—F. Semon (67, Feb. 7), while not condemning the whole doctrine of nasal reflex neuroses as erroneous, is fully convinced:—that the influence of the nasal mucous membrane on the nervous phenomena at distant parts of the body has been greatly exaggerated; that the mechanism of reflex processes is not understood; that it is very important to decide whether a neurosis be of nasal origin or not; and, finally, the need of considering the question in cases of apparently nasal origin, whether treatment of the nose will benefit or not.

He thinks present results are very unsatisfactory and hopes for more reliable rules of procedure in these cases.

J. J. Richardson (68, July 14) records a case of *epilepsy* in a boy of 12 cured by cauterization of the much hypertrophied inferior and middle turbinates. The attacks had occurred frequently for eighteen months.

L. Revillet (152, Oct. 28) calls attention to a *nasal cough*

in tuberculosis, and gives these diagnostic points: An irregular cough, occurring particularly in the dorsal decubitus; disproportion between cough and expectoration; polyps, hypertrophy or atrophy of the nasal mucous membrane; mucopurulent discharge in naso-pharynx. Treatment is that of the nasal condition.

H. L. Swain, (29, Aug.) in a study of *bronchial asthma* in relation to nasal disease, concludes that the nasal condition is only one of the factors which may initiate the bronchial spasm.

In Relation to General Disease.—Seifert (80, Aug. 27, full abst. 17, Nov. 24) considers the diseases of the nose in their relations to general diseases. The nasal complications and manifestations of general diseases are very fully presented.

H. O. Pantzer (278, Nov., '99) believes that *septicemia* following a colotomy in one of his patients had its origin in nasal disease. He finds 30 per cent of his operated cases accompanied by nasal complications.

C. Ziem (19, No. 5) maintains that nasal suppuration may cause *abscess of the bones* of the extremities or of the joints, and advises thorough examination of the nose and its sinuses in all serous or purulent bone and joint affections of obscure origin.

J. A. Thompson, Cincinnati, (3, Nov., '99) believes it possible that obstructive disease of the nose may produce a dilatation if not an actual valvular disease of the heart. He gives the history of four cases of nasal obstruction in which there was dilatation, in two with an accompanying valvular murmur. In three the heart symptoms were entirely relieved by treatment addressed to that organ after the nasal obstruction was removed, while in the fourth the heart was very greatly improved. In the same article he cites a case to show that an apparent hypertrophic rhinitis may be due to impaired circulation, the nasal symptoms disappearing with appropriate treatment for the heart.

Gauthier (abst. 33, Sept.) finds that recurring erysipelas is met with especially often in persons with chronic nose and naso-pharyngeal disease; he therefore suggests that in such recurring cases the organs mentioned should receive careful examination and appropriate treatment.

Miscellaneous.—Five cases of *enlargement of the nose* were exhibited (A.) (2 Jan.) by Drs. Hill, Thomson, and Thorne, and a general discussion of such cases followed. Four of the cases were in children from 8 to 15 years old, one of whom had congenital syphilis, and one atrophic rhinitis. The general opinion seemed to favor the view that such cases were due either to injury or syphilis, the much greater number being due to the former.

Under the title *Rhinophyma*, E. Wende and G. W. Wende (135, Oct., '99) describe a hypertrophy of the nose caused by excessive beer drinking. The case began with an erythema, followed by a continual hyperemia of the fibrous tissue and finally a marked enlargement.

O. Rosenbach (80, Oct. 9, '99) proclaims the ordinary face veil as worn by women, drawn tightly across the nose, to be the cause of a *nasal erythema* in many cases.

A. J. Chalmers (8, Jan. 6) describes a disease called "*hen-puye*" or dog nose, which is common in parts of West Africa. The disease starts in a native during or soon after an attack of yaws, in which the nasal mucous membrane has been affected. A small, oval, bony swelling with the long axis generally directed downward and outward appears on each side of the nose. This is attached to the nasal bones and the nasal process of the superior maxilla and to the inferior maxilla in advanced cases. It grows slowly by the deposition of new bone under the periosteum and does not affect the mouth, the orbital or nasal cavities nor nasal ducts. There is some pain in the nose at first, while later there may be headache and pain in the swelling during wet weather. The tumors may remain small or may steadily grow till the sight is interfered with, but they are not known to ulcerate. The iodides do not affect the growth, although the mass of bone is soft and easily removed by operation, which is the only means of cure. C. believes the disease to be due to an osteoplastic periostitis induced by absorption of the poison of yaws through the nasal mucous membrane.

Sturrock (9, Nov. 25, '99) has had success in the removal of

foreign bodies from the nose by a very simple apparatus. A piece of small-sized rubber tubing from one to three inches in length is attached to the nozzle of a good brass or hard rubber syringe. The free end of the tube is then applied to the foreign body and the piston withdrawn. In this manner the varieties of foreign bodies which are most difficult to remove by ordinary means are easily secured.

Lacoarret (269, Nov., '99) records three cases of *argyria* of the nasal mucous membrane through breathing in silver dust, in workers in a fireworks factory. The mucous membrane was atrophied and very black.

H. Dupuy, New Orleans, (1, Apr.) reports a case of purulent rhinitis in a woman of 25, due to the presence of the *left lateral incisor* in the nasal cavity, the tooth having erupted through the floor of the nose instead of in its normal position. He quotes in full H. Tyler's report of a similar case. In this case the tooth was a supernumerary one, growing from the septum directly across the nasal cavity, with the crown imbedded in the inferior turbinated body. Patient a woman aged 30 years. A. W. MacCoy, Philadelphia, reported such a case, with references to upwards of twenty similar ones (7, 1897).

Joncheray (11, No. 26, '99) reports a case of *unilateral emphysema* of the fronto-orbital region in a youth of 15, caused by blowing the nose forcibly and frequently.

W. F. Clevenger (217, Feb.) describes a case in which, after removal of a septal spur, with but little primary hemorrhage, a *hemorrhage* into the conjunctival sac *through the nasal duct* occurred the night succeeding the operation. No plugging had been done.

Guisez (215, abst. 33, Aug.) gives the history of two cases to illustrate the *dangers in plugging* the nose both anteriorly and posteriorly at the same time. Both were cases of severe epistaxis. In one, empyema of the antrum resulted; in the other, otitis.

[Other articles quoted in the Year Book show the great

advantage of exactly locating the bleeding point and applying a very small piece of gauze at that part alone.]

H. Jullian (224, July 10) reports a case which he considers one of *tabetic nasal crisis*. The patient, a man of 55, had developed locomotor ataxia some years before. Frequent attacks of tingling and pricking deep in the nose occurred, followed by fits of sneezing lasting fifteen minutes. After the crisis ended there was no abnormal sensation in the nose, and the attack was not accompanied by hypersecretion. There was total anosmia, and the nasal mucous membrane was much reduced in sensibility, tickling being scarcely felt and no sneezing resulting. Taste was about lost.

Cl. Bernard and Pehu (271, Sept. 16, '99) relate an interesting case of *typhoid ulceration* of the septum, in a woman of 27. Severe bleeding occurred, which was first discovered in the stool and in vomited matter. The source of the hemorrhage was found to be the septal ulcer.

F. G. Corbin (167, March) reports three cases of *Myiasis Narium* seen in the Argentine Republic. In one case about 200 maggots were removed, there being suppuration, toxemia, sloughing of the soft palate, and an abscess back of one tonsil. Antiseptics were of little use in the cases, chloroform being the only satisfactory treatment.

Epistaxis.—F. C. Cobb (119, Jan. 4) gives the local causes of epistaxis as being ulcerations resulting from crusts on septum, the causes for the latter being irritation as from deflected septum, foreign bodies, new growths and operations for sarcomata. The general causes mentioned are plethora, anemia, hemorrhagic diathesis, acute febrile diseases, vicarious menstruation, disease of kidneys, syphilis, phthisis and alcohol. For treatment, cauterization of the bleeding point with chromic acid or galvano-cautery. Suprarenal extract is very effective temporarily, but recurrence is apt to take place. If packing is resorted to, be careful not to occlude the Eustachian opening.

C. C. Stephenson, Little Rock, (1, Mar.) gives his experience with a very persistent case of epistaxis in a man of 28, in which

cauterization of the bleeding points was harmful and packing and insufflation of powders were of only temporary benefit. A ten per cent *oily solution of cocaine* used as a spray finally controlled by using every two hours, all other measures being abandoned.

A. B. Kelly (2, Mar.) describes four cases of nose bleed in which the *ethmoid veins* were the source of severe hemorrhage, and suggests that a careful search will often show the source of bleeding to be above the anterior end of the middle turbinate. The practical point in this, as he points out, is that it will oftentimes be possible to check hemorrhage with a *very small piece of gauze* packed above the middle turbinate, thus avoiding the discomfort and dangers of complete plugging of the nasal passage.

Lancereaux (abst. 7, Sept. 29) asserts that a large number of so-called spontaneous epistaxes have a purely dynamic origin in some vaso-motor disturbance. Hemorrhages in the pharynx and bronchi may thus occur, leading to suspicion of tubercular disease. Gout and rheumatism are predisposing causes.

Fedorowitsch (abst. 7, Jan. 6) treated fourteen severe cases of epistaxis successfully by having the patient sit erect in a chair, place both arms on his head and breathe quietly and deeply as possible with open mouth.

E. B. Gleason (38, Nov., '99), in an article on nasal hemorrhage, reports a case in which, after application of a galvano-cautery point to a naso-pharyngeal fibroma, the patient lost one pint of blood, although the flow was stopped in two minutes. He also has controlled severe epistaxis by having the patient sit with head erect, instead of bent forward, as is usual. Iron salts should not be used to check hemorrhage. Da Costa (70, Dec. 9, '99) makes a local application on a cotton tampon of a mixture of gelatin 1 part, normal salt solution 16 parts.

D. Richmond (9, Feb. 3) reports a case of severe epistaxis occurring in a woman of 23 on the twenty-first day of an attack of *typhoid fever*, the temperature having suddenly fallen from 104° to 98°. The bleeding was from both nostrils, and plugging

had to be resorted to, with the result that blood escaped through the lachrymal duct. Later, when the posterior plug was increased in one side, the blood escaped from the ear through an old perforation in the drum.

W. E. Shaw (48, Feb. 10) used a piece of *chicken gut*, pushed into the nose and inflated, to check epistaxis. W. Tudkins (*idem*) used a *condom* in the same manner for the same purpose. Another method (7, Jan. 6) is to have the patient lay both hands on his head, sit upright and breathe quietly and as deeply as possible, with the mouth open. Frochon (139, Oct.) checked a severe epistaxis by one injection of *lemon juice* in the nose.

Olfactory.—A. Onodi (105, Aug. 11) discusses the anatomy of the olfactory nerves and the pathology of olfactory disorders. While very few pathologic observations have been made, the conclusion is justified that the center for smell is probably situated in the gyrus hippocampi and gyrus uncinatus. O. makes two classes of anosmias: (1) essential or true anosmia, which may be central or peripheral, according to the part of the olfactory region affected; (2) mechanical or respiratory anosmia; (3) functional anosmia. The etiologic factors concerned in each of these classes are quite fully considered. Hallucinations of smell, various parosmias and kakosmias are frequent precursors of anosmia.

Vaschide and van Melle (82, Jan. 20, abst. 2, July) present a new *theory as to the nature of odors*. Odor is not the result of contact between particles detached from odoriferous substances and the terminations of the olfactory nerves. Rays of short wave-length, analogous to but not the same as those which we believe give rise to light, heat and the Röntgen phenomena, impinge on the olfactory filaments and are perceived as odors. The following are their principal arguments:

1. The history of science forces on us the conclusion that sensations are produced, not directly by substances, but rather by the surrounding medium.

2. The olfactory nerves have the same cerebral origin as the optic nerves, and probably resemble them as to function.

3. Chemical odoriferous substances, which belong to the same group, resemble one another in their spectra.

4. Odors have the quality of absorbing radiant heat, which proves that there is an intimate relationship between odors and heat rays.

5. Many bodies from which particles are given off have no smell, while it is impossible to prove that many others with strong smells give off any particles.

6. Some bodies, each having a strong smell, when placed together, antagonize each other so as to produce no smell. This is analogous to the effect of placing a hot and a cold body together.

7. The power of stuffs to absorb smells varies with their colors.

8. The sense of smell may be fatigued on one smell, remaining intact for all other odors, just as the eye may be fatigued for one color, yet remain active for all other colors.

9. Air is not the only vehicle for odors, for the author's experiments prove that one can smell quite well with the nares full of an odoriferous fluid.

G. Martuscelli, Naples, (63, Jan.) in a series of experiments, found that destruction of the peripheral neurons has a distinct influence on the central neurons, and that while experimenting on one side only, the opposite bulb was affected. With the galvano-cautery, the bulbar cells were completely changed in form and destroyed. With chromic acid the form of the cells was more or less preserved. The sharp spoon caused the least apparent central lesions.

Toulouse and Vaschide (213, No. 11) found that among twenty women with general paralysis, eight possessed no sense of smell. They explain the *anosmia* as due either to lesions of the olfactory nerve or to localized cortical changes.

The same investigators find (265, June 10, '99) that the olfactory sense increases up to the sixth year of life and then

diminishes, but the ability to distinguish odors increases with the years. The sense of smell develops earlier and stronger in the female than in the male. They also find (265, July 8, '99) that olfactory power is as great in epileptics as in normal individuals, but that the perceptive power is diminished. Also (ibid., Sept. 18, '99) that the sense of smell tires the least of any of the senses, the explanation being perhaps that the sense is exercised during inspiration only and rests during expiration.

Reuter (5, B. 9, H. 3) makes *three classes of anosmia*:

1. That accompanying total extirpation of genuine nasal polypi.
2. That accompanying ethmoiditis.
3. That accompanying ozena.

He thinks that in the first class the anosmia is probably due to failure to completely remove every bit of polypoid tissue, thus leaving the olfactory fissure closed instead of open. His impression is that in his own cases he has noticed that a persistence of anosmia after thorough removal of polypi indicates a sure recurrence, the reverse being also true.

In the second class a clearing away of the anterior cells and thus opening up the way to the sensory area will restore the sense of smell.

In the third class will be found some cases in which restoration will follow thorough cleansing, while in the very advanced cases the olfactory region has also suffered from atrophic changes and the anosmia is permanent.

E. Toulouse (224, Nov. 10, '99) proposes the perception of camphor as a definite *measure of the olfactory power*. He gives various good reasons for the use of this substance. He uses flasks containing various strengths of solutions. A solution of 1 in 1,000 in water is readily perceived. Beginning with the weakest solution, the ascending strengths are used until one is reached which is perceived by the patient.

V. Grassi (abst. 7, Jan. 6) writes on the same subject and proposes a test with an alcoholic solution of benzoic acid. The camphor test would seem better and simpler.

P. Jaques (11, Dec. 9, '99) reports a case of *complete anosmia* in a man of 45, who had no recollection of ever having had an olfactory sensation.

Plazek (80, No. 51, '99) records a case of *double congenital anosmia*, and states that the only other recorded case is that of Zwaardemaker.

Nasal Hydrorrhea.—Lermoyez (126, July, 1899) considers that spasmodic hydrorrhea is merely an accident of arthritism, and frequently alternates with the other phenomena, diarrhea, migraine, etc., of this diathesis. He believes the local lesions which are often thought to be the cause of the hydrorrhea are more often its effects. The fluid he proves to be a true secretion and not a mere exosmosis and the flow to be due to abnormal excitation of the secretory filaments of the superior maxillary nerve. L. opposes local treatment whether by galvano-cautery, electrolysis or surgical ablation, averring that any of these may do serious harm and very rarely result in cure. Omitting local treatment, he attacks the hypersecretion with atropin and the vaso-dilation with strychnin, giving small doses. L. gives his results in forty-two cases: Fifteen treated locally gave two cures. Twenty-seven, with atropin and strychnin, gave ten cures, four not cured, thirteen lost sight of, but improved. The entire subject is ably discussed in the original paper, of which a good abstract is given in 2, August.

Molinié (81, No. 3) insists that the term hydrorrhea nasalis should be limited to the discharge from the nares of profuse and purulent aqueous fluid, without local or surrounding irritation. M. records a case, with analysis of the fluid. He believes that many cases of discharge of cerebral fluid from the nose are incorrectly reported as the disease in question, and considers that the only *method of diagnosis* is by analysis of the fluid.

B. Berens (1, Oct.) reports a case of the disease cured by the local and internal administration of *suprarenal extract*. In the discussion (D) several cases of the same nature were reported cured by the same remedy.

Cerebral Fluid, Escape of.—L. Hektoen (183, Feb.) alludes to a case in which Fenger removed what appeared to be a polyp from the patient's nose, but examination showed it to be a portion of a meningocele. Cerebral fluid escaped from the opening. Fenger made an opening through the face and sutured the edges of the dura, with prompt and permanent recovery of the patient. H. writes of the spontaneous escape of the cerebral fluid through the nose. He thinks the route of escape is probably along the perineural sheaths of the olfactory nerves. Medical or surgical treatment promises little, but early recognition of the condition is very desirable in order to prevent as far as possible the danger of infection of the meninges through the nose.

W. Freudenthal (144, June) reports a case in a woman of 50, there being an almost constant drip. Twice during the course of two years the flow ceased, upon which symptoms of cerebral pressure ensued. There were polypi and complete anosmia. The case was supposed to be one of tumor of the hypophysis cerebri.

T. Fisher (9, Nov. 18, '99) describes the case of a 4-year-old boy, sick 4 months with meningitis. He was blind and sleepless. Pronounced improvement followed after several days discharge of an abundant, clear fluid from the nose.

TUMORS.

Polypi.—Cholewa (19, No. 3) in a discussion of the reason for the recurrence of nasal polyp, rejects the view of Hajek that the primary cause of polyp formation is a superficial inflammatory condition of the mucous membrane. C. believes the original irritation to be located in the diseased bony structures, the surrounding tissues being later affected. Calling attention to the similarity between these pathological processes and subacute osteo-myelitis, he states his belief that they are identical.

The main cause of the disease is infection, recurrences being

due to reinfection, the structure of the bone favoring retention of infective material.

Since the inflammatory changes in the bone may disappear without leaving any sign, the bone should not be removed with the polypi at first, but recurrences demand radical removal of the diseased bone. C. thinks that the fact that polypi continue to recur after the mucous membrane has been snared and burned and thus rendered incapable of inflammation, is very strong evidence against the mucous origin of the growths.

O. Barrago-Ciarella (5 B. 10, p. 489) describes a peculiar organization which he has found several times in nasal polypi and which he believes to be *parasitic*, although he is not able to prove it.

L. Lack (2, July) exhibited (A) two patients on whom he had done a *radical operation* for nasal polypi with purulent discharge. In both cases previous removal of polypi had been followed by speedy recurrence. Under gas Lack thoroughly scrapes the region with a large ring knife until a large cavity is excavated in the lateral mass of the ethmoid. In one of the cases 18 months had elapsed without recurrence. L. uses this method only in severer cases, but he has done the operation on 50 patients without a dangerous or serious result. Lack considers the disease to be due to bone changes and nothing short of removal of this diseased area will suffice for cure in the average case.

In the discussion following Parker and Spicer *approved* of the operation, both practicing it themselves with good results. On the other hand Grant and Permewan *strongly opposed* the method, considering it too serious an operation for the disease in question. Hall thought the question of the source of origin of polypi as yet undecided, and believed such a radical operation ought not to be taken up as a routine treatment, save in the severest cases.

At the June meeting of the society (A) C. A. Parker showed a case on which this operation had been done with most satisfactory results. The patient was a man of 30 on whom polyp removal had been practiced for 6 years without cure. The middle

turbinate and the ethmoid cells were thoroughly removed. Butlin thought the operation too serious to be undertaken in ordinary cases.

Champeaux (11, No. 26, '99), in a syphilitic patient with *mucous* and *fibrous* polypi found that specific treatment caused rapid disappearance of the fibrous tumors, but had no effect on the mucous growths.

N. Rimscha (54, No. 43, '99) reports a very large nasal polyp which was *gangrenous* in the lower part. L. Rethi (299, July) removed a nasal polyp 4 inches long and over 4 inches in circumference. The width of the nose was much increased.

A case is reported (164, Sept. 6, '99) in which an enormous nasal and postnasal polyp resulted in *paralysis and death*.

H. W. Loeb (147, Jan.) removed, at one sitting, *170 polypi*, weighing 77 grammes, from the nose of a man suffering from orbital and ethmoid cellulitis. The electro-cautery snare was used.

Echinococcus.—W. K. Rodgers (7, Feb. 3) had a case of echinococcus cyst in the nose in a healthy woman of 34. A fibrous polyp of the septum had been removed from the nose $2\frac{1}{2}$ years before and a mucous polyp at the same time. The cyst developed on the site of the mucous polyp. There was no recurrence 2 years after the removal of the cyst.

Osteoma.—O. J. Stein, Chicago, (1, July) describes a case of bilateral osteoma of the nose in a man of 28. This is a very rare condition, Stein being able to find the report of only 2 cases of the symmetrical variety. The growth seemed to be started by a blow on the nose 11 years previously and the occlusion was practically complete. The base of the tumor in each case occupied the position of the inner wall of the antrum. There was neither ulceration nor offensive discharge. The patient applied for laryngeal trouble, not complaining of the symptoms produced by the nasal deformity. The author discusses the condition quite fully with literary references.

Riviere (139, Sept.) removed 6 osteomas, ranging in size

from a pea to a small nut, from the nose of a patient who had been treated for ozena 6 years.

Malignant Tumors.—J. Wright (7, July 8, '99) remarks that the occasional healing of malignant tumors without operation compels the conclusion that it is not yet possible with the microscope to determine the exact degree of malignancy of certain forms of cell-growth. Adenoma of the nose is rare and tends to become malignant. Spindle-celled endothelioma and angiosarcoma of the septum have often a good course and do not recur.

Adeno-sarcoma and adenocarcinoma are of equal gravity. Small, round-celled sarcoma of the fauces is generally inoperable.

In suspected malignant disease of the larynx remove as large a piece as possible, and if the microscope indicates malignancy proceed to radical operation. Pachydermia verrucosa laryngis often looks very much like epithelioma under the microscope. It is impossible to give all the points for differential diagnosis in the early stage of cancer of the larynx, since every case has its own special combination of symptoms.

E. J. Moure (11, No. 45, '99) gives his experience in the *treatment* of malignant tumors of the nasal fossae, which has led him to modify his former views on the subject. He concludes that despite the considerable size of many tumors and the ready hemorrhages, all operable cases should be removed, not externally, but by the *natural orifices*. He presents the argument for this course.

T. J. Harris, New York, (1, Feb.) exhibited (C.) a woman 32 years old from whose nose he had removed an adenoma of suspected malignancy. There had been complete nasal stenosis and a history of repeated operations for polypi. Beckel's operation was done, giving good access to septum, maxillary and sphenoid sinuses and ethmoid cell, all of which, being involved, were operated. H. had seen three other cases of adenoma of nose. He had operated on one of them three times by intranasal means with recurrence each time.

Fibro-Sarcoma.—Sendziak (abst. 2, Feb.) reports an interesting case of fibro-sarcoma in a boy of 14. The tumor had existed for 5 years and yet had not invaded the neighboring sinuses. It contained a cyst filled with serous fluid, a rare condition in malignant tumor. Removal by endonasal route by galvano-cautery and cold snare.

Pluder (18, No. 42, '99) describes a case of fibro-sarcoma in a patient 26 years old in whom a resection of the upper jaw had been done 3 years before, for removal of the growth from the nose, antrum, and naso-pharynx. Recurrence took place 1 year later, almost as large as the original tumor. This was destroyed by P. by *electrolysis* (40 to 50 to 100 M-A.) within 9 months. No further recurrence 1½ years later.

Sarcoma.—M. J. Coomes (110, Oct. 1, '99) reports a case of tumor of the nose diagnosed as small, round-celled sarcoma. As extirpation was not followed by a recurrence, C. inclines to the opinion that it is very difficult to distinguish between *granulation tissue* and small-celled sarcoma.

P. G. Goldsmith (17, Sept. 22) reports a case of sarcoma of the right nasal fossa in a man of 38.

Epithelioma.—J. B. Shelmire (277, No. '99) reports a case of epithelioma of the nose treated by caustic paste with recurrence after 16 months.

Bronner (123, July, '99) removed a *tubular epithelioma* of the nose with no recurrence 10 years later.

J. L. Goodale (7, Feb. 3) describes the case of a man 51 years old who had had nasal polypi removed from the left side at frequent intervals for 33 years, the right side being also affected the past few years. *Carcinoma* developed in the left nostril and was so extensive before diagnosis was made that radical operation was not done. Death occurred 15 months from the onset of malignancy.

Konzert (14, No. 7) reports a *fungous carcinoma* of the external surface of the nose in a man of 72.

MIDDLE TURBINAL.

Structure.—E. Zuckerkandl (19, No. 10, '99) in a valuable article discusses the variations in the middle turbinal. The middle turbinal normally presents an excavation known as the turbinal sinus. This has an opening leading into the middle meatus, the inferior ethmoid fissure or sometimes high enough to lead directly into the ethmoid cell.

When the cavity in the middle turbinal is largely developed Z. terms it the *concha bullosa*, the enlargement involving only the anterior half and sometimes filling the entire nasal chamber. There is as a rule but one cavity of variable size, but there may be several, each cell having its own opening. There may be one or two openings leading out in the same positions as in the turbinal sinus. The mucous membrane is continued through the ostium into the cavity. Z. concludes that since the cavity is empty, the lining thin and there are no residues of pathological processes, the *concha bullosa* must be regarded as a physiological structure and of the same character as the turbinal sinus.

Miscellaneous.—J. P. Clark, Boston, (6, Oct. 20) reports two cases of *bullous middle turbinates* in women, the prominent symptom being headache. Removal with the cold snare gave complete relief. [The editor had a case of the same nature in a girl of 16 the past year relieved in the same manner.]

J. Wright (2, June) doubts that the *bullous conditions* are the result of development from foetal conditions without inflammation. In cases which he had examined he found on the convex surface what appeared to be osteoblasts, and on the concave surface what appeared to be osteoclasts. Most of these cases occur in women after puberty.

J. E. Newcomb (1, Jan., p. 31) reports a case of simple *bony cyst* of the middle turbinate accompanied by a polyp. The cyst presented the appearance of a soft polyp before removal. T. J. Harris reported (*ibid.*) a similar case.

J. P. Davidson (53, Mar. 9) gives the following indications for *operative treatment* of the middle turbinate:

1. Cases of nasal obstruction with symptoms due to the same.
2. As a preliminary to the treatment of naso-pharyngitis and chronic laryngitis.
3. In some cases of chronic catarrhal otitis media.
4. In cases suffering from reflex nervous symptoms of the respiratory tract.

Stetter (19, No. 4) has frequently had patients who complained of *nasal obstruction* who showed no abnormality save enlarged middle turbinals, thus showing that more than a wide inferior meatus is necessary for normal breathing.

W. H. Steers, New York, (7, July 14, p. 114) had a case of *posterior hypertrophy* of the middle turbinate in a man 38 years old. An attempt had been made to snare off the hypertrophy, but the wire broke and a piece of it was allowed to remain. Several months later the case came under Steers' care and he removed the broken wire, the parts still being much swollen. Severe hemorrhage ensued necessitating tamponing and repacking for ten days. Five days after removal of the tampons there was a sudden fatal hemorrhage. There was no history of hemophilia.

SEPTUM.

Pathology.—J. Wright (26, Oct. '99) discusses this subject. Jacobson's organ is rudimentary in man, it is found about $\frac{1}{8}$ -inch back of the column near the floor of the nose. True papilloma in the nose is nearly always found on the anterior part of the cartilaginous septum. Septal spurs and deviations result from hypernutrition due to inflammation, traumatism being a frequent cause.

Deflections, Etiology.—J. H. Coulter (87, May) concludes as follows in regard to the etiology of deviated septum: 1. In many cases rhinitis is the cause of septal deflections. 2. Traumatism is not the most frequent cause, but is often an important

factor, especially in the very young. 3. It is not found in infancy, because the turbinates are not usually developed sufficiently to cause effective stenosis.

E. L. Vansant, Philadelphia, (7, Apr. 7) traces the regular course of pathologic changes occurring in the unobstructed nostril in these cases. The increased respiration through this side causes compensatory hypertrophy, in the first place, of the inferior turbinate. Obstruction ensues and inflammatory changes begin, causing an increase in the connective tissue which leads to atrophy of the glandular elements. This atrophy of the inferior turbinate increases the demand on the middle turbinate, which goes through the same series of changes as the inferior. Finally the various inflammatory changes and septic conditions in the nasal chambers lead to affection of the accessory cavities and polypoid changes in the middle turbinate.

Rethi (216 B., 1 H., 9) considers the etiologic factors to be trauma, compensatory action, and physiologic influences, the latter being most frequent; while general causes play an important part. The symptoms are also in large measure general and some of them persist after the cause is removed.

Jacob (abst. 139, Aug.) remarks on the denial of the existence of septal deviations in the fetus and presents preparations (Société anatomique) demonstrating such deformity in the fetus.

In an article on this subject (1, Jan.) D. B. Kyle describes a number of varieties and gives the appropriate treatment for each. The varieties considered are:

1. The split cartilaginous septum with bulging into both nostrils.
2. Dislocation of the columnar cartilage.
3. Simple deflection in which the cartilage is very thin.
4. The letter S deflection.
5. Deflection of cartilage with involvement of bony septum.
6. Splitting of cartilage with bulging on one side only.
7. Deflection in which there is redundancy of tissue overlapping the septum and extending close to floor of nose.

The general causes he divides into (1) Deviation from disease; (2) Traumatism; (3) Congenital.

Inflammatory processes of whatever origin involving the cartilage or mucous membrane covering it may cause deviation, purulent rhinitis of childhood, diseases of first teeth, syphilis, tuberculosis, lupus, simple ulceration and that following diphtheria and typhoid fever, uric acid diathesis and inflammatory changes from pressure by enlarged turbinates are all recognized as causes.

Traumatic causes usually occur in infancy and childhood and slowly bring about deviation. Congenital deflections often originate in reality during birth. Adenoids in the postnasal space also have a tendency to cause nasal deformity.

In variety No. 3 K. has found a malleable tube made to fit the deflection and gradually widened to be very successful. As a rule the tube is to be worn 4 to 12 hours a day for 2 or 3 weeks, but should never be kept in long enough to cause ulceration.

While recognizing that any irregularity in the septum tends to promote catarrhal conditions Kyle does not resort to surgery unless there is insufficient breathing space.

In deflections in which the cartilage is thick or in which the bony septum is involved K. uses the crushing forceps, but with rounded edges to prevent crushing of soft tissues, making incisions first through the mucous membrane and then with a saw $\frac{1}{8}$ to $\frac{1}{2}$ the depth of cartilage or bone in order to control the lines of fracture. In all cases K. uses the soft metal tube and guards carefully against ulcerations, giving a good deal of after-attention to the cases. The special treatment for the several varieties is given in detail.

Operation.—E. J. Moure (abst. 2, Nov.) offers a new operation for deviated septum. He first removes any abnormal thickening of the convexity and allows time—1 month—for healing. An incision is made at the base of the septum parallel to the floor of the nose extending from the vomer to a point just back of the vestibule. A second incision is carried along the bridge of the nose of about the same length as the first. The remainder of the

treatment is that used in the Asch operation, except that the dilator is removed after 8 days. Excellent results are claimed after 2 years' trial.

E. Baumgarten (5 B. 9, H. 3) uses Schleich's infiltration method in operations on the septum, thereby avoiding the annoyance of hemorrhage during operation. Secondary hemorrhage is more likely to occur, however, and he tampons to prevent.

Krieg (5 B. 10, H. 3), in severe deviations, resects a tongue-shaped flap from the cartilaginous septum extending the base backward as far as the conditions demand, even to the choanae. A table of 130 cases is given showing the value of the operation. 77.6 per cent were in males, 22.3 per cent in females. Bony involvement was found in 52.3.

Max Thorner (7, Jan. 6) gives his experience with the Asch operation for deviated septum in 27 cases. He secured very satisfactory results and considers the operation a great improvement over any hitherto known to the profession. He lays special stress on the point that the operation must be so thoroughly done that no force is necessary in introducing the Mayer splint. Thorner also had a good article on the same subject in 11, May 26.

The Asch treatment receives approval by R. McKinney (30, Feb.), J. J. Kyle (176, Dec. '99), T. C. Evans (149, Aug. 5, '99), T. K. Hamilton (248, '99), G. J. Ross (170, Dec. '99), O. J. Stein (273, Dec. '99), Hal Foster (112, Sept. '99).

E. Mayer (274, Oct. '99) states that in more than 300 operations by the Asch method he has seen but one recurrence.

B. S. Booth (6, Oct. 14, '99) after trying other methods with little success found the Asch method satisfactory.

G. Bönninghaus (5 B. 9, p. 264) tabulates 19 cases operated on with perfect success by Krieg's method, that is, making a resection on the convex side. B. also includes any deviation of the bony septum in the resection.

R. C. Myles (1, Aug. '99) describes a case successfully treated by Gleason's method. E. B. Gleason (17, Dec. 3, '99) describes his method and recommends its use.

H. W. Wandless (3, Feb.) presents a set of nasal saws and rasp for operations on the septum. Directions for use in the various septal deformities are given and the advantages described.

Septal Spurs.—W. F. Chappell, New York, (6, Jan. 27) after removing a septal spur, dusts on an antiseptic powder, then places over the wound a piece of gutta-percha which has been dipped in a 50 per cent albolene and nosophen solution. This is held in position by an assistant while dressings are packed into the cavity. He uses, by preference, the Bernay's sponge. This dressing is changed twice at intervals of three days, after which no further dressing is necessary. He is careful not to use too much of the Bernay's sponge and thus cause too much pressure.

In the same article C. illustrates a new nasal splint which, by a fan-like arrangement, may be made twice as wide at the posterior extremity as at the anterior after introduction.

E. Pynchon (1, Sept.) makes an argument for the removal of all irregularities of the septum, thus causing the nose to approach to the ideal condition, just as the oculist endeavors by glasses to render the defective eye as nearly as possible like the ideal emmetropic model.

His conclusion is that slight prominences of the nasal septum, which through heightened color of the lining mucous membrane, give evidence of chronic inflammation, are to be reduced as nearly as possible to the normal plane of the septum.

In discussing this paper (1, July), Amos, Stein, Ewing, Goldstein, and Ballenger all thought the author too radical in his surgical work.

D. J. G. Wishart, Toronto, (1, July) has for two years used the Carmalt-Jones spokeshave instead of the saw in the removal of two varieties of septal spurs. These are (a) those which present the appearance of horns, occurring usually far back, bony in character and impinging against a small area of the inferior or middle turbinate; (b) those resembling shelves, more anterior in position, partly cartilaginous and partly bony in character, from $\frac{1}{4}$ to 1 inch in length and parallel or nearly so to the floor of

the inferior meatus. The bevel of the cutting edge is turned toward the septum and having engaged the spur the instrument is drawn steadily forward and the operation completed at one sweep, as otherwise a jagged edge will be left. W. thinks this operation possesses very obvious advantages over the saw operation.

Perichondritis and Periostitis.—G. Killian (13, Jan. 30) describes a case of acute perichondritis and periostitis of the septum due to suppuration in a dental cyst connected with the second left upper incisor. The greater part of the cartilaginous septum was destroyed and the vomer was involved, but escaped without loss.

Benign Tumors.—Hasslauer (5 B. x. H. 1, abs. 4, No. 2) groups these tumors according to histological structure and from literature is able to construct a table comprising 281 cases. Of these 81 were tuberculomata, 57 bleeding polypi, 35 warty growths, 30 mucous polypi, 26 syphilomata, 16 polypoid hyperplasias, 9 fibromata, 6 myxomata, 4 adenomata, 4 enchondromata, 3 cysts, and 10 cases of various isolated forms.

W. R. Coston (6, Aug. 5, '99) removed a polyp weighing 1 ounce, and $3\frac{1}{4}$ inches long from the septum of a 12-year-old girl.

Barrago-Ciarella (abst. 68, Mar. 31) reports a bean-sized mucous polyp of the septum.

W. E. Casselberry (7, Feb. 3) removed an angioma the size of a small bean from the lower anterior part of the surface of the septum in a woman of 30. Removal was with the hot snare, the base being cauterized with chromic acid. No recurrence two years later.

Sarcoma.—Eiler (139, Aug.) reports 2 cases of round-celled sarcoma, one in a woman of 31, the other in a man of 35. The first was removed, with recurrence after 6 weeks, in the other operation was refused.

ACCESSORY SINUSES.

J. Garel (11, No. 22) calls attention to Weichselbaum's discovery of the *universality of sinus empyema* in persons dead of influenza. Garel thinks that in the grip epidemic of 1899-1900 the involvement of the sinuses was more frequent than before and that suppuration occurred in the great majority of the cases. The diagnosis is not difficult as a rule. The prognosis is good, spontaneous cure generally occurring. The congestion of the nasal mucous membrane should be relieved, hot applications made to the face, and internal treatment used. Puncture is not indicated. Aspiration by negative politzerization is recommended. Twelve cures are reported.

Stanculeaure and Baup (81, No. 3) speak of the great importance from a prognostic standpoint of a determination of the *bacteriology of empyemas* of these cavities. From an examination of the pus from 17 cases of frontal, maxillary, and fronto-maxillary empyema they conclude that two varieties may be distinguished clinically and bacteriologically, one with fetid pus, consecutive to dental affections and containing especially anaerobic species; the other of nasal origin, with non-fetid pus, containing pneumococci, streptococci, and occasionally bacillus perfringens.

Jacques (266, Aug. 1, '99) describes *latent sinusitis* as distinguished from the acute form and advises early radical operation, since serious complications in the meninges and brain may arise. J. also notes the existence (266, Aug. 16, '99) of a variety of sinus empyema due to the *bacillus coli*, which is distinguished by the especially fetid smell of the discharged pus.

Lichtwitz (126, abst. 4, No. 3) discusses the apparently *great disproportion* between the frequency of empyema of the nasal accessory cavities in the living and in the cadaver. He quotes the statistics of Harke, E. Fränkel, Lapalle, and Kiaer in which in a total of about 900 autopsies made with reference to this point there was found sinus disease in 30 per cent. From Chiaris' and his own statistics L. finds the ratio in the living to be

only about 2 per cent. He reconciles the disproportion on the theory that by far the greater number of sinus diseases are unrecognized in life even when in the hands of skilled rhinologists, while in a very large proportion the symptoms are so mild that special treatment is never sought. Again, in such diseases as diphtheria, typhoid, scarlatina, measles, influenza and pneumonia the severe general symptoms are very likely to cause the sinus disease to be overlooked.

E. W. Roughton, London, (2, May) considers, in a very thorough and systematic article, the diagnosis and treatment of *chronic purulent nasal discharges*. A good presentation of the present views on the subject is given.

D. Grant, in discussing this subject (2, June), says: "While I am as strongly convinced as anyone that in certain cases a radical operation is the only means of curing chronic suppurative conditions of the frontal sinus and the antrum of Highmore, I am equally convinced that a very large proportion of such cases can be cured without any other treatment than that which can be carried out through the nasal passages, and I hold that recourse to the so-called radical operation is unjustifiable until intranasal treatment has had a full trial." G. cited a number of cases in which a very few irrigations had cured cases of several months standing. He finds that some antral cases yield to puncture and irrigation through the inferior meatus very promptly after failure with alveolar puncture, but in general, alveolar drainage is best if it may be gained without sacrificing a sound tooth. In some cases the anterior end of the inferior turbinated must be amputated before a satisfactory opening can be obtained through the inferior meatus. Amputation of the anterior end of the middle turbinated is nearly always necessary in frontal sinus disease.

H. Tilley (67, No. 22, 29, Dec. 6, '99) discusses this subject very fully and gives briefly many valuable observations which do not readily admit of excerpts being taken.

L. Vacher (abst. 2, Nov.) discusses the treatment of ethmoid, frontal, and maxillary sinus empyema in patients who refuse external operation. The usual internal operations are ad-

vised, curetting the ethmoid cells until all form one cavity; removal of anterior portions of the middle and inferior turbinates, etc.

Goris (abst. 2, Nov.) has done *Bardenheuer's operation* of decortication of the face 8 times, generally for ethmoido-maxillary empyema. The incision is made through the buccal mucous membrane from one zygomatic process to the other and the mask turned up on the forehead, the nasal mucous membrane being incised at the right moment. The operation is useful in the case of individuals who refuse to have an incision on the face.

G. Laurens (abst. 2, Nov.) operated on 5 cases of ethmoid or fronto-ethmoid sinusitis with orbital fistula with perfect cure. He does a very *radical operation*. A long curved incision is made, starting at the end of the eyebrow, encircling the root of the nose and ending a little to the inside of the internal commissure. The supra-orbital nerve is resected. All the organs (muscles, ligaments, pulley of oblique muscle, etc.,) attached to the internal wall are detached and the eyeball pressed gently outwards. Avoid the anterior ethmoid artery. Free access is now had to the ethmoid and frontal cells. The esthetic result is good and no oculo-motor troubles result.

Taptas, Constantinople, (abst. 2, Nov.) in cases of combined frontal, ethmoid, and sphenoid empyema prolongs the ordinary Luc incision downwards in the middle line of the nose to the lower third of the nasal bone. The frontal sinus is now opened through the anterior wall, and the floor of the sinus and part of the nasal process of the maxillary bone is cut away. The lower part of this opening is on a level with the ethmoid and sphenoid and gives ready access to these cavities.

T. J. Harris, New York, (1. Apr.) reports an interesting case in a boy of 17 in which a severe left mastoid disease was accompanied by profuse purulent discharge from the right nasal passage and exceedingly severe frontal pain. Two radical operations on the frontal sinus discovered no pus. Finally iodide treatment brought relief in some measure. The patient returned home to Brazil and recovered.

H. finally concludes that the disease might have been empyema of the sphenoid sinus, but he was never able to make a sure diagnosis.

J. H. Bryan, Washington, (6, Jan. 20) relates the history of a very instructive case of chronic abscess of the *frontal, ethmoid, and sphenoid* sinuses in a woman 40 years old. The radical external operation for the frontal disease was done and through this opening all the anterior ethmoid cells were removed. Owing to the absence of symptoms sphenoid disease was not suspected. Acute leptomeningitis set in 24 hours after operation and *death followed* 2 days later. Autopsy revealed empyema of the posterior ethmoid cells and the sphenoid cavity. Caries of the cribriform plate was found and the infection was supposed to have occurred at this point or through the lymph channels.

G. E. Shambaugh (137, May) reports a case of chronic empyema of the *frontal, maxillary, and sphenoid* sinuses on one side of the head in a woman of 22 who had noticed a purulent nasal discharge since an attack of typhoid fever 10 years before. The nasal cavity of the diseased side was filled with polypi. Removal of the middle turbinate allowed an easy demonstration of the sources of the purulent discharge.

Lipowski (289), after enumerating the usual methods of diagnosis of central and frontal disease, mentions the valuable aid occasionally gained from *percussion and auscultation* of the cavities, the phonendoscope being used.

S. F. Snow (135, Jan.) believes that nasal or accessory sinus disease is the determining cause in 75 per cent of *cephalalgias*. Cases are reported illustrating the subject.

Gilbert (Thèse de Paris, 1899) distinguishes two varieties of *tertiary syphilis* of the accessory sinuses, the nasal form which remains limited and has a favorable prognosis, and the orbitocerebral form which is usually accompanied by more or less severe brain complications. Tertiary syphilis of the accessory cavities is rarely primary, usually extending from the nasal fossae.

ETHMOID.

P. L. P. Villegas (abst. 68, Jan. 27, p. 164) says that the *arrangement* of the ethmoid cells is very variable, with consequent irregularity in the arrangement of the frontal, maxillary, and sphenoidal openings. He objects to the division of the cells into the anterior and posterior and proposes a new division.

Purulent Inflammation.—Hajek and Bosworth read papers on purulent ethmoiditis before the International Medical Congress at Paris. Hajek (abst. 2, Sept.) defined "purulent ethmoiditis as a disease of the mucosa and of the osseous framework of the ethmoid bone, accompanied by a purulent discharge. Tuberculosis, syphilis, and traumatism as well as cancerous processes were not included under the term. He makes two divisions:

1. Disease of the mucosa (muco-periosteal investment).
2. Disease of the trabecular structure. Polyp formations are included under the former division.

Bosworth (abst. 2, Sept.) considered the question of treatment: Purulent ethmoiditis is essentially a condition of imprisoned pus, therefore follow the surgical rule and liberate it. The tendency to spontaneous cure is slight. B. uncaps the ethmoid cells by the wire snare ecraseur, then uses the burr.

F. S. Milbury, Brooklyn, (6, Jan. 20) does not agree with Bosworth and Woakes that "the tendency in all cases, and the result in the large majority of instances, of a suppurative inflammation of the ethmoid cells is necrosis of bone." In his clinical experience, when cases due to syphilis, tuberculosis, mercury, phosphorus or trauma are eliminated, necrosis is seldom found. M. thinks the ethmoid cells are oftener the seat of disease than the maxillary sinus. Simple ethmoiditis usually subsides spontaneously, but the suppurative disease is very difficult to conquer and there will be occasional failures under the most skillful treatment. Three illustrative cases are detailed in which, after long suffering, attributed to other causes, the true source of disease was found in the ethmoid cells and relief speedily followed radical treatment.

A. F. Sumner (168, Nov. '99) does not think surgery is very successful in chronic suppurative disease of the posterior cells. He thinks electrolysis is a safe and satisfactory method of reducing middle turbinate hyperplasias.

W. L. Ballenger reports a case of suppurative ethmoiditis (109, Apr.) in which there was no pus discharge into the nose. Marked pain was present and upon removing the anterior end of the middle turbinal thick yellow pus welled from the wound. Upon curettement the walls of the ethmoid cells and roof of the same (floor of the cranium) were almost as soft as the mucosa. The inflammatory process had so softened the bone that it would have been an easy matter to have penetrated the cranial cavity during curettement. This case illustrates the extreme liability of suppurative ethmoiditis to extend its infection to the meninges and cause meningitis.

Ballenger reports a case of *non-suppurative* ethmoiditis in which he recommends the local application of a 4 per cent solution of cocain to be followed in a few minutes by the application of a saturated solution of the suprarenal extract (in chloroform water), for its ischemic effect. The swollen mucosa is thereby unloaded of its excess of blood and lymph and the normal ethmoid openings rendered patulous and air allowed to again enter the cells. The pain is thereby relieved and the inflammatory infiltration held in check. Where there is marked thickening of the middle turbinal from hyperplasia he recommends the removal of the hyperplastic area with a snare, or more preferably with a Holmes' scissors.

Relation to Asthma.—C. C. Rice (6, Nov. 11, '99) believes asthma to bear little relation to ethmoid disease unless polypi are present, the latter causing mouth-breathing with the resultant catarrhal state causing the asthmatic seizure by vaso-motor disturbances.

Bosworth (6, Nov. 18, '99), in an article on this subject, takes substantially the ground reported in the Year Book for 1900 [pp. 34-5].

FRONTAL SINUS.

Empyema.—H. Tilley (2, July) showed five cases (A.) in which he had done the radical external operation with excellent cosmetic as well as curative results. T. prefers packing with gauze rather than using Luc's tube and closing the external wound at once. He considers the success of the operation to depend upon careful attention to three main points:

1. Removal of the anterior end of the middle turbinal and all inflammatory products in the mid-meatal region before proceeding to the external operation.
2. Making a free passage into the nose.
3. Careful curetting of the diseased mucous membrane, followed by packing with gauze until a healthy lining of granulation tissue was produced.

In curetting, while all granulation tissue was removed a certain thickness of lining membrane was left, thus protecting the thin posterior wall. Temporary strabismus was not uncommon after the operation, due to disturbance of the pulley of the superior oblique muscle during the operation, or from inflammatory exudation after the operation. It passed off, as a rule, in a week or two.

H. Tilley (8, July 14), in an article on this disease, goes into a careful consideration of the subject and gives the notes of 14 cases. In only one of the cases was cure reached by intranasal irrigation and T. believes that while much improvement may be secured by removal of obstructions and irrigation, there is very small likelihood of cure without the radical operation. Radical external operation was done in 11 cases with cure in 7 and great improvement in 3. Death occurred in one case, resulting from chronic septic osteomyelitis of the frontal bone. This was due to imperfect opening up of the nasal outlet and tight closure of the external wound causing the pus to be forced up into the freshly opened diploe. T. believes that the other fatal cases reported have been due to the same mistake. He opposes strongly intranasal operation, even under the X ray, as practiced by Spiess.

Having nearly lost one patient from the blood flowing through the nose and into the lungs, Tilley now invariably plugs the posterior choanae.

Tilley reported (2, Sept.) a case in a young woman of 19 in which he was able to pack a strip of double-thick gauze 2 inches wide and 44 inches long into the left frontal sinus after the radical operation. In this case the right cavity was involved by a perforation in the septum and a radical operation done on it later. There was no pus discharge into the right nostril and the diagnosis of right sinus disease was made by the discharge through the perforation into the left sinus.

Another case reported by Tilley in the same article was that of a woman of 30 in whom both frontal sinuses were affected. The left cavity was opened externally, the usual operation being done. Pus still continued to discharge into the nose and finally an external fistula formed leading from the sinus. Three months later T. operated again and found the trouble to be in the infected ethmoid cells which extended forward between the floor of the sinus and the orbit, communicating with the sinus by a small opening. These were thrown into one cavity with the sinus and one week later skin-grafted by the Thiersch method, thus securing much more rapid healing. T. proposes to graft thus in all future frontal operations.

Gerber (18, Mar.) obtained valuable *diagnostic* aid by using an improved double Vohsen lamp, by which means he was able to inspect both frontal sinuses at once and thus compare one with the other. A number of observations are detailed to illustrate the value of this method.

R. Sattler, Cincinnati, (3, May) gives a good statement of the present knowledge of lesions of the frontal sinus and anterior ethmoid cells and their surgical treatment.

Winckler (13, Jan. 16) protests against the adoption of any one method in all cases of empyema. Kuhnt's method, which W. considers the one most used at present, causes too great deformity and should not be resorted to unless there are special indications for it, Czerny's or Küster's, or one of the other osteoplastic

methods, being rather adopted. After radical operation Winckler no longer flushes out the wound, but dries with gauze tampons and uses insufflations.

W. P. Meyjes (abst. 139, Nov.) operates according to the *fac.* method, but makes a very small opening through the front wall. He, however, removes a large piece from the lower wall, through this reaching the ethmoid cells and, if necessary, the sphenoid cavity.

K. Grunnert (13, No. 48, '99) describes a plastic operation by which he was able to prevent in large measure the disfigurement following Kuhnt's operation (in which the entire front wall of the sinus is removed). A vertical incision two to three cm. long is made at each end of the horizontal incision. The rectangular flap thus obtained is denuded of epidermis and drawn down into the sinus. From each side of the original incision flaps are taken and drawn laterally and upward, resting upon the denuded flap. The depression was thus completely filled in and union by first intention secured. There was no cicatricial contraction of the eyelid, as was feared.

An unusual case of empyema of the frontal sinus is reported by F. T. Rogers (4, Mar.-Apr.). The case was of three years' standing in a woman of 40, and seemed to have resulted from improper operative intranasal treatment. External operation was done on the left sinus, the right showing no disease, and prompt healing ensued. A month later the right sinus, having shown involvement, was opened and treated as the left had been. Healing occurred and stitches were removed without suppuration, but a few days later an abscess appeared in the line of incision and the entire forehead was infiltrated. Septicemia developed, the old line of incision was opened and the parts cleansed for two weeks. An extensive operation then revealed a necrotic condition of the entire right half of the frontal bone, necessitating the removal of a sequestrum two inches in extent, exposing the superior longitudinal sinus and the dura to that extent. Removal of all necrosed tissue was followed by recovery, with an unsightly scar. R. advocates a very free opening and finds the strip of

gauze more satisfactory for drainage than the tube. [For reports of three similar cases, ending fatally, see Year Book for 1900.]

E. Mayer (1, July) exhibited a case (C) of successful frontal sinus operation. The external operation was done, a large opening being broken into the nose, giving good drainage. A fenestrated tube passing from the external incision into the nose was kept in position six weeks. T. R. Chambers recommended enzymol in these cases if operation is not done.

T. R. Pooley (3, May) describes an interesting case in a man of 38, in whom there was a fistula leading from the sinus into the upper part of the orbit. The radical operation was successfully done. The various operations for this condition are described.

J. D. Paige, Savannah, (119, Apr. 5) reports a case in which there was double antral empyema, bilateral empyema of the ethmoid cells and empyema of the left frontal sinus. The antrums were opened through the alveoli, the ethmoid cells opened and curetted, the infundibular opening enlarged and the frontal sinus irrigated.

Buller and Byers (58, Mar.) report a case of *exophthalmos* in a boy of 19, due to empyema of the frontal sinus and ethmoid cells. The protrusion had occurred suddenly during the night fifteen days before and had not increased. Transillumination showed no difference between the frontal sinuses, but the left antrum was decidedly darker. Operation, external, was successful, with drainage through the nose. The dark antrum proved to be due to thickened bone.

D. B. Kyle (6, Dec. 16, '99) reports a case of *spontaneous external rupture* of an empyema of the frontal sinus in a woman of 60. There was not much pain. The disease of the sinus had existed several months, with considerable swelling of the tissues over the sinus. Rupture occurred about an inch above the supra-orbital ridge in the median line.

G. Ricard (11, Sept. 22) cured a frontal sinus empyema in a woman of 52 by the Ogston-Luc operation. The woman also suffered from *ozena*, which was not changed by the operation,

thus showing that an ozena is not necessarily cured by the relief of a concomitant sinus disease.

G. Spiess (5, B. 9, p. 285) reports on eight cases operated on endonasally under the Röntgen ray, and speaks of the safety of the operation, but is quite reserved in recommending the operation, as his therapeutic results were small.

Tumors.—Valude (abst. 139, June) reports a case of frontal sinus *cyst*, causing widening of the nasal bridge and exophthalmos. The sinus was trephined and curetted, the mucous membrane being simply hyperemic. Healing occurred in fifteen days, but a similar condition afterward developed in the left frontal sinus.

Luc (126, Apr. '99) reports a mucocele in a woman of 56. The affection commenced three or four years previously and produced no symptoms to cause complaint. A round, smooth swelling encroached on the orbital cavity from the floor of the right frontal sinus. The cavity was filled with a glairy, opalescent fluid, which bathed the dura mater at the back of the sinus. No fronto-nasal duct was found.

Moser (122, B. 25, H. 2) discusses quite fully two tumors of the frontal sinus removed by him. The first was an *osteoma*, originating in and enormously distending the sinus. The attachment was by pedicle to the median side and chiseling this through rendered the tumor easily removable. The right eye had been gradually displaced downward, but with slight injury to vision, whereas after removal of the tumor and the return of the eye to nearly its normal position an amaurosis developed, rendering the organ useless. This result leads the author to advise caution in performing the radical operation, lest a result be obtained which is worse than the tumor. Of course, great deformity calls for operation, however.

The second case was either a *sarcoma* or a hyaline degeneration of an *epithelioma* in a girl of 16, who had had the tumor nine years. The growth was the size of an apple and displaced the left eye downward, forward and outward. The frontal sinus was found to extend as far back as the body of the sphenoid. M.

discusses various other tumors of this region that have been reported.

ANTRUM OF HIGHMORE.

Acute Empyema.—M. H. Cryer (7, Nov. 24) maintains that the ordinarily accepted impression that a majority of antral empyemas are due to disease of the teeth is a mistake. The article is well illustrated, showing the relations of the antrum to the other cavities.

W. Wroblewski (5, B. X. H. I.) accepts as causes of this disease sudden temperature changes, common colds and various infectious diseases. The disease is usually unilateral and one attack predisposes to another. The secretion is rarely fetid. Transillumination is much surer in its results than in the chronic disease. W. has been able in every case to make a diagnosis without puncture. Acute empyemas heal spontaneously in four or five weeks and he does not operate before six weeks. Regarding the disease as an infection, W. treats by rest, antipyretics, diaphoretics and warm poultices, giving KI when the fever and pain lessen, with the result that all his cases have recovered by "spontaneous healing." W. describes five cases of acute antral empyema in the *Gazeta lekarska* No. 37, 1899, with the same conclusions.

Avellis (5, B. X. H. 2) finds that acute and often very severe beginning empyemas as a rule *heal spontaneously*.

G. Avellis (5, B. X. H. 2), after considering the clinical history of two cases of his own and one of Hajek's, concludes that an acute empyema need neither heal nor become chronic; it may *caseate*. This caseation, acting as a foreign body, causes supuration without causing chronic changes in the mucous membrane, for cure results as soon as the caseous mass is removed.

Moszkowski (5, B. X. H. 2, abst. 4, No. 3) claims priority in demonstrating the influenza bacillus in acute antral empyema and describes his method.

Chronic Empyema.—L. Grünwald (5, B. 9, H. 3, '99) reports on 106 cases, giving results and conclusions. Cases presenting ozena symptoms are not considered in the paper. Simple puncture and washing out should be the method chosen when practicable, the more recent cases and those in youthful individuals being chosen for this method. If the puncture can be made through a tooth-socket, so much the better. Of twenty-three cavities treated by puncture, 43 per cent were healed, 6 per cent improved, 40 per cent uncured.

Since even the radical operation does not insure a cure, G. is conservative in resorting to it. In antra with high natural opening, however, the prospects of cure from simple puncture are so poor that the radical operation is justifiable at the very first. Clearing out the cavity sufficed to cure in three months, the uncomplicated empyemas of not more than three years' standing, providing there were no nasal complication, no marked change in the antral mucous membrane and no unsound teeth. Catarrhal cases were equally favorable when uncomplicated. Puncture and cleansing, however, offers little hope when there is marked bony disease, or loss of much mucous membrane, or secretion of bad character, or in the presence of complications mentioned above. In ozenous cases, too, there are so few cures from the simple operations, and the after-treatment is so very long, that we are warranted in recommending radical operation at once, even though this does not always cure.

G. emphasizes the point that catarrhal sinusitis which is not accompanied by marked disturbance of any kind should receive only symptomatic treatment, the passages kept clean, hypertrophied turbinals shrunk, polypi removed, etc., the results being often very satisfactory.

G. H. MacKenzie (41, April) calls attention to the possibility of chronic empyema existing *without anterior purulent discharge*, and reports two cases, in one of which there was a post-nasal discharge, while in the other there was no discharge, the patient only complaining of a foul odor. Transillumination gave correct indications in both cases.

Lubet Barbon and Furet (81, No. 3) remark the similarity of many of the symptoms of antral *empyema* and antral *gumma*, such as suppuration, fetidity, unilateralness and absence of transparency. On the other hand, in abscess there is a collection of pus, in syphilis, wall infiltration. In the former abundant pus with intermittent flow; in the latter the discharge is scanty but constant. The coagulation of the syphilitic discharge into small grayish-white pieces, which may be blown into the handkerchief, the authors consider the characteristic of the disease. In syphilis the subjective fetidity may be slight, while the objective may be unbearable. The pain is as a rule much greater in the syphilitic disease than in *empyema*.

Operation.—Dresel (abst. 139, June) gives statistics of forty-five cases of antral *empyema* in Fraenkel's clinic which were operated on with cocain anesthesia through the canine fossa or through the alveolar process; 26.09 per cent were cured.

Warnecke (5, B. X. H. 2) cured eleven cases of chronic antral *empyema*, some having lasted seven years, by the Krause method. He makes the puncture with Krause's trocar in the inferior meatus, irrigates, dries with air and dresses with iodoform. He maintains that this simple method should always be tried before resorting to the more radical measures. J. Tommasi (63, Apr.) reports five cases treated the same way, three being cured, two improved. He makes the same recommendation as Warnecke.

M. Halle (80, Aug. 27) reviews the different methods of opening the antrum and their disadvantages and decides in favor of the trocar in the lower meatus. Irrigations with boric acid, followed by iodoform insufflations, constitute the after-treatment.

Kaspariant, Moscow, (abst. 2, Nov.) uses in diagnosis, pressure with a right-angled probe in front of and behind the process uncinatus, thus forcing pus from the ostium maxillare. K. operates with a special knife, cutting into the antrum in front and behind the unciform process, cutting away the process with a conchotome; then resecting the lower part of the interior

osseous wall of the antrum together with the median portion of the inferior turbinal. He reports thirty-four cases operated with complete cure in thirty-one.

The technique of the Caldwell-Luc radical operation for empyema is given by Roaldes in an article (6, Jan. 6) reporting five cases operated on. W. P. Meyjes (abst. 139 Nov.) prefers this method.

E. Mayer (1, July) operated on two cases of chronic empyema by making a large opening in the canine fossa and a counter opening of large size in the inferior meatus.

Siebenmann, Basle, (13, Jan. 2) treated five cases, in which the alveolar operation was contraindicated by sound teeth, by passing the little finger into the middle meatus and with the tip of the finger crushing into the antrum, making a passage $1\frac{1}{2}$ cm. by 2 cm. In case the nasal passage be too small to admit the finger, a sharp spoon may be used.

A. B. Duel (70, Feb. 24) cured a case of fifteen years' standing by opening in the canine fossa and curetting. A fragment of a tooth broken in extraction was found, forming the nucleus of a calculus. Various operations had been previously done and daily irrigation for five years had been practiced, but the undetected foreign body made all treatment futile.

R. A. Wright, Mobile, (6, July 28) discusses the subject of empyemas of the accessory cavities in general and gives the histories of five cases of chronic antral empyema, three of which were cured by drainage and cleansing treatment, while two did not yield completely, although much improved.

H. S. Straight (111, Nov., '99) reports a case in which both antrums and both frontal sinuses were involved. One of the frontal sinuses was opened. The patient died apparently of cerebral abscess.

Lichtwitz (2, Feb., p. 93) calls attention to the *danger to the alveolus in drilling* for antrum disease. He has observed five cases in which, the floor of the antrum being thick, a tubular sequestrum of bone came away some weeks after operation. The danger arises from the heat generated by the prolonged drilling.

and is to be avoided by interrupting and cooling the instrument.

G. Spiess (5, B. 9, p. 327) describes some cases of the same character and recommends the use of a drill diminishing in size from the point.

Miscellaneous.—F. H. Koyle (1, Oct.) reports a very interesting case of *tic douloureux* in a woman of 48. The neuralgia had been ascribed to diseased teeth, disease of the antrum and various other causes, but treatment in these directions gave no relief. The antrum was normal, except for a slight thickening of the mucous membrane, although transillumination had shown opacity as compared with the other side. Correction of refractive and muscular errors of the eyes cured the case.

T. J. Harris (1, Aug.) reports three cases of *intractable neuralgia*, due apparently to antral empyema, but unrelieved in two of the cases by radical operation and thorough after-treatment.

L. Rethi (247, No. 51, '99) reports a case of *tuberculosis* of the antrum, apparently secondary to disease of the inferior turbinate.

E. Gulikers (abst. 7, July 28) reports a case in which the amber mouth-piece of a pipe was removed from the antrum, where it had remained eighteen months.

R. J. Wenner (134, Mar.), in a girl of 3½ years, suffering from antral empyema, removed *two teeth* from the antrum and a sarcomatous mass involving the orbit. Death occurred from meningitis.

Tumors.—In those cases of *dental cysts* in which the cyst breaks through the floor of the antrum and fills the cavity, Sachs (13, Feb. 13) makes a diagnosis from the nature of the discharge and treats by removal of a good-sized piece of the cyst and gum with Cooper's scissors and washing out. Care is necessary to prevent the opening closing too soon.

L. Lack (2, Aug.) had a patient, male, aged 20 years, in whom there was evident bulging of the antrum. There was, however, no pus discharge, and transillumination showed the

same translucency on both sides. There was a polyp in the opposite nostril. Diagnostic puncture showed no pus. An opening made in the canine fossa revealed a cavity filled with ordinary *mucous polypi*.

H. J. L. Struycken, Breda, (300, Mar. 10) describes a case of rapidly growing *cancer* of the antrum in a woman of 62. The case at the beginning seemed like a simple empyema. S. also reports a chronic empyema in a man of 50, with *granular degeneration* of the alveolar process. This cauliflower growth and granulations removed from the antrum looked much like carcinoma, but proved not to be, under the microscope. Another case in which the upper jaw was affected resembled this case closely, but was *carcinomatous* and required removal of the jaw. Cure. S. also records a case of sarcoma of the base of the skull in a young woman, which was thought to be antral empyema at first.

H. H. Curtis (1, Oct.) reports a case of *primary epithelioma* in a woman of 50. The symptoms had existed two weeks when seen by C. An opening was made in the alveolus and the antral cavity washed out. Fifteen days later the nose was occluded, the jaw swollen, and part of the alveolus softened and broken down. Under ether a large opening was made in the canine fossa and alveoli, and the cavity emptied with the curette. The scrapings revealed the nature of the disease. The invasion of the surrounding structures now became very rapid and the patient died six weeks after the curetting. Curtis quotes the literature of the subject.

SPHENOID SINUS.

Wilhelm and Jacques (215, Dec. 12, '99) report a case of *catarrhal inflammation* of the sphenoid sinus caused by severe injury of the inner edge of the orbit by a small stone in a mine explosion. The orbital wound healed promptly, but pain in the neck and purulent post-pharyngeal discharge, with absence of disease of the antrum or frontal sinus, directed attention to the

sphenoid. Operation was done through the upper inner edge of the orbit and about 300 cc. of a brownish, bloody, serous fluid evacuated, with rapid healing.

S. Lodge, Jr., Halifax, (1, Feb.) reports a case of *fatal sphenoidal suppuration* in a man 31 years old, who had had syphilis nine years before. There had been constant pain in the right ear and right side of face for six months and swelling of the right side of face for two months. There was a very free discharge of pus from the right side of the nose, but the seat of disease was not exactly located till the autopsy. Pus was found at the base of the brain, but no abscess. All the other accessory cavities were normal.

Three cases of *unilateral optic neuritis* associated with sphenoidal sinusitis or disease of the posterior parts of the nasal fossae are reported by F. de Lapersonne (52, Sept. 17, '99) and considered to warrant a careful examination of these parts for disease in all cases of unilateral optic neuritis.

O. Jacob (abst. 139, Sept.), in *catheterizing* the sphenoid opening, passes the catheter lightly along the roof of the nose, turning the point outward as the back of the nasal roof is reached.

NASO-PHARYNX.

M. Faure (236, May 3) discusses the effects of persisting nasopharyngeal lesions after the grip. Such lesions may cause rheumatic symptoms persisting for months but disappearing as soon as the lesion is cured. After relief from the grip itself by general measures, F. uses resorcin in oil and inhalations of mentholized alcohol for the naso-pharyngeal sequelae.

C. Savoie (abst. 2, Nov.) successfully treats obstinate chronic naso-pharyngitis by the following method: Douche the naso-pharynx morning and evening with a pint of 1 per cent solution of phenosalol. Follow this by nasal inhalation for four or five minutes of this solution: Formol, 0.9; menthol, 10; gomenol, 10; chloroform, 10; eau de cologne, 100. Paint the

naso-pharynx every evening with one of the following solutions: Saturated aqueous solution of resorcin; or menthol, 1; tinct. iodi, 5; glycerin, 10.

P. Mink (19, No. 9, '99) diagnoses and treats affections of the naso-pharynx by means of *applications through the nose*.

F. Huber (Jacobi's Festschrift) discusses the subject of naso-pharyngeal disease in *pediatric practice*, and concludes with the enumeration of fourteen advantages derived from removal of adenoid vegetations.

L. Krilitschewski (22, No. 34, '99) thinks he had a case in which *enlargement of the spleen* with some febrile movement resulted from chronic naso-pharyngeal catarrh.

E. Neisser (80, Aug. 16) describes five cases of a chronic *non-membranous diphtheria* of the naso-pharynx, occurring in robust young maid-servants. During the summer the throat is healthy; at the beginning of cold weather the voice becomes hoarse, the throat dry, while the mucous membrane of the naso-pharynx atrophies and is covered with tenacious mucus and grayish-yellow crusts. Three of the cases had no history of previous diphtheria, but the diphtheria bacillus was found constantly and abundantly in all. There was no ozena. Antitoxin had no effect.

Eschweiler (13, Apr. 24) believes the naso-pharynx to be oftener the *primary seat of diphtheria* than is ordinarily supposed. He relates a case and suggests further observation in regard to the matter.

P. S. Donnellan (17, Dec. 8) reports a case of *mycosis* in which the faucial tonsils, the post-pharyngeal wall and both surfaces of the uvula were covered with a grayish-white membrane, which left a bleeding surface on removal, closely resembling a case of diphtheria, but without constitutional symptoms. The patient was a man of 42. For treatment the man was put on a mouthwash of pot. chlorat one dram, pot. bicarb. one-half dram, warm water one pint; to be used every three hours. The patient was also instructed to smoke freely, holding the smoke in the pharynx as long as possible. At each visit D. removed a part of

the membrane and mopped the mucosa with hydrogen peroxid solution. Good results followed.

G. Avellis (13, Mar. 6) had a case of *pemphigus* of the pharynx and naso-pharynx in which, as a result of the disease, adhesions had occurred between the soft palate and the posterior pharyngeal wall, so that it was possible to pass only a small probe. The adhesions were incised so that a bougie the size of the thumb could be passed. The patient was then instructed to pass a properly shaped hard rubber bougie a number of times daily, which he did for four months, with success. A. found three other cases reported, of the same condition, due to the same cause.

M. Aguilo (abst. 139, July) reports a case of *erysipelas* of the naso-pharynx extending to the tonsils, palate, oropharynx, and hypopharynx. The disease began in the region of the lower jaw; although there was a false membrane on the tonsil, diphtheria was excluded.

R. Botey (abst. 2, Nov.) contends that in almost all cases of *false hemoptysis* the source of bleeding is to be found in the naso-pharynx instead of in the lingual tonsil or larynx, as usually taught.

Chas. Heath (2, May) exhibited a patient (A.) 31 years old, having very *large Eustachian eminences* and showing deep sulci above, which he considered as sinuses. A rather full discussion failed to support his view, the condition being a not unusual one in patients with large Eustachian eminences and some adenoid tissue.

Foreign Bodies.—C. B. Gamble and L. M. Tiffany (17, Jan. 6) report the case of a wood carver who had a *chisel* four and one-half by one by three-sixteenths inches imbedded in the naso-pharynx and posterior pharyngeal wall. The chisel entered at the inner edge of the right eye, and owing to other severe injuries and the slight nature of the wound of entrance the foreign body was overlooked and not detected till the symptoms required examination by Gamble, two months later. The chisel was removed by an extensive skin and bone flap operation, tracheotomy being

first done, uncovering the end of the instrument near the original entrance. Recovery was uneventful and complete.

S. L. Jepson (17, Feb. 17) refers to a somewhat similar case occurring in the practice of Dr. John Frissell, of Wheeling, W. Va., in which the *brass-tipped wood ferrule* of an umbrella was forced through the antrum of Highmore, entering at the canine fossa and striking the back of the pharynx. The piece, four inches long, broke off and the skin closed over it, leaving only a small sinus, through which pus escaped. The piece remained three years before removal, the man in the meantime being in fair health.

Tuberculoma.—Schmithuisen (13, No. 15) had a case of this rare tumor in a patient 45 years old. There was severe headache, preventing sleep, and a fetid discharge from nose and pharynx. The cervical glands were not enlarged, the left submaxillary only being enlarged.

Diagnosis was made by microscope and the tumor removed without much hemorrhage. Parts of the sphenoid and occipital bones were found necrosed and were removed with a sharp spoon through the nose. The patient died of tuberculosis three months later. S. thought the tumor might be a mixed infection of tubercle and syphilis.

G. King (7, Mar. 3) had a case of tumor attached to the pharyngeal vault and posterior border of the vomer, in a boy of 12, which encroached on the tuberosity of the superior maxilla and soft palate of the left side. A continual fever, emaciation and clubbed finger-tips suggested *tuberculous granuloma*.

Polyp.—W. Schwartz (297, No. 32) relates an interesting case in which a 3-year-old child presenting the symptoms of adenoids was found to have a hard polyp attached to the posterior surface of the soft palate. The growth was removed by snare and found to be a lipoma with epidermis-like covering.

Texier (11, No. 32) removed a fibro-mucous polyp the size of a hen's egg from the naso-pharynx of a girl of 21. W. P. Porcher (1, Nov.) removed a fibro-mucous polyp six inches long from the naso-pharynx of a boy of 16.

Fibroma, Operation.—E. Escat (81, No. 2, abst. 4, No. 3) maintains that recurrence of these growths is just as frequent after radical removal by major surgical procedures as after removal through the natural orifices. Moreover, the most radical operation possible falls far short of the requirements of radical removal. E. divides the stages of development into three: (1) The tumor strictly limited to the pharyngeal cavity. (2) The tumor with prolongations into the nasal fossae. (3) When the tumor has invaded all the surrounding cavities. In the first two he would always operate through the natural channels; in the third he is doubtful. The methods of operation under cocain and under general anesthesia are given. Under general anesthesia E. uses two raspatories, a lateral, shaped like a hook with lateral cutting edges, and a transverse, shaped something like a strong Gottstein curette, with one side of the triangle absent and an anterior and posterior cutting edge. Any adhesions with the palate or walls of the pharynx are broken up with the lateral raspatory. The tumor is grasped with strong tenaculum forceps and drawn forward; the transverse raspatory is then used in a manner the reverse of that in which the Gottstein curette is used. Hemorrhage is less than that in resection operations and is to be controlled if necessary with tampons of gauze saturated with hydrogen peroxide. Recurrences are very likely to occur and should be examined for every three months. Once in six months, with forceps and cocain anesthesia, or once a year with the raspatories and general anesthesia, the recurring growths are to be removed, until the age of 23 years, when spontaneous retrogression will generally occur.

In a discussion, London Laryngological Society, on the subject of *fibroma* of the naso-pharynx (2, Feb.), participated in by Powell, Tilley, Spencer, Spicer, Butlin, Symonds, Bond and Thomson, the general opinion was that such growths should be removed through the mouth, the soft palate being split and the hard palate chiseled away if necessary to secure room. On the point of a preliminary tracheotomy, opinion was about equally divided.

present views on the etiology and prognosis of adenoids. He thinks the frequency of this lymphoid hypertrophy in children is much greater than the 3 per cent of Chappell, and much less than the 33 per cent of Harrison Allen. He would not remove a moderately enlarged pharyngeal tonsil unless it were producing symptoms.

De Simoni (64, Anno XV) found the bacillus of Frisch in the center of some adenoid tissue. As this bacillus is regarded as the specific one of rhinoscleroma, this discovery weakens that position somewhat. De S. is inclined to consider the bacillus of Frisch as a derivation from the pneumo-bacillus of Friedlander.

Pathology.—Piff (132, Oct., '99), in 100 pharyngeal tonsils, found signs of *tuberculosis* in only one. He also found that patients with adenoids showed no special disposition to tuberculosis. The same writer quoted from another journal (279, B. XX, p. 297, abst. 139, Sept.) is stated to have found tuberculosis in three of the one hundred cases, and strongly insists on the removal of all pharyngeal tonsils.

L. Lewin (5, B. 9, H. 3) writes a very exhaustive article on *tuberculosis* of the pharyngeal tonsil, basing his work on an examination of 200 subjects, and his final conclusions on all published reports. His conclusions are:

1. According to our investigations, hyperplastic pharyngeal tonsils conceal tuberculosis lesions in about 5 per cent of the cases.

2. The tuberculosis is present in the so-called tumor form, it is characterized by the absence of surface indications of its presence—latent tuberculosis of the tonsils.

3. This "latent" tuberculosis may apparently be the first and indeed the only localization of the disease in the individual.

4. It is generally, however, associated with other tuberculous processes, generally of the lungs, which may, however, not have developed at the time the tonsil was operated on.

5. It is a comparatively frequent condition among those suffering from tuberculosis of the lungs.

6. It is found in the normal-sized tonsil as well as in the

hyperplastic. Whether it may cause hyperplasia by the development of some toxin is doubtful. It can, however, retard the normal involution of the tonsil.

7. Its part in the etiology of hypertrophy of the pharyngeal tonsil is unimportant.

8. By removal of the tonsil the disease may be removed, even though tuberculosis of the lungs be present.

L. Lichtwitz and J. Sabrazes (127, B. X. H. 2), from an examination of the *blood* in children with adenoid vegetations, found a slight degree of anemia and leucocytosis; increase of the percentage and of the absolute number, per cubic mm. of the large mononuclear cells; a decrease of the relative and absolute proportion of the neutrophile, polynuclear cells.

Haase (262, Dec., '99), in eleven *stutterers*, found only one with adenoids, and in twelve *stammerers* only one.

Classification.—F. Danziger (19, No. 1) classifies adenoids according to etiology, symptomatology, etc. (1) Children of a few months, in which the enlargement of the tonsil takes place in a few days as the result of acute coryza and the obstructive symptoms become at once apparent. (2) Children of the same age in which the enlargement is gradual, the symptoms appearing slowly and insidiously, until the adenoid habitus is established. It is in this group that malformations are most likely to appear. (3) Young persons, mostly females, in the second decade of life, in whom the day symptoms are slight, while obstruction and all symptoms are marked on lying down. In these cases the tumor is very likely to be a mucous sac with several compartments.

H. Cuvellier (abst. 2, Nov.) in eight years treated 2,785 children for enlarged tonsils; 569 were cases of simple faucial tonsil hypertrophy, 1,060 simple adenoids, 1,156 combined faucial and pharyngeal tonsil hypertrophy. C. makes three classes or types of adenoid vegetations: (1) The respiratory, which occurred 1,214 times; (2) the auricular, seventy-five times; (3) the mixed, 730 times. The only contra-indication for operation is pronounced hemophilia.

Reflex Disturbances.—Thomas, (11, Jan. 27) gives the details of two interesting cases of adenoid reflexes. A boy 6 years old suffered with severe attacks of hiccough at intervals for two and one-half years, the attacks being accompanied by regurgitation of food, vomiting, pyrosis, strabismus, etc. No medical treatment availed to relieve. Finally attention was called to the nasopharynx, which was found filled with adenoid growths. Removal cured the hiccough. In another patient, 15 years old, a severe photophobia was cured by removal of adenoids and a septal spur.

A. Goldenschmidt (15, Sept. 2) narrates the various affections that have been cured as the result of removal of adenoid growths. The list includes deafness, throat and ear affections, hay fever, idiocy, epilepsy, enuresis.

Statistics.—Struckmann (139, No. 10) gives the results of an examination of 320 boys and 251 girls between the ages of 6 and 14, in the communal schools of Nestoed, Denmark, with reference to the frequency of adenoids. The examination was digital. Of the boys, 25 per cent had moderate enlargement, 5 per cent had great enlargement. Of the girls, 22 per cent were moderate, 8 per cent severe, the percentage thus being the same—thirty in both sexes.

Arslan (Archiv. di Otol., Rhinol. e Laring., Vol. IX, p. 159) gives a statistical report of 1,800 cases of adenoid enlargement. Very small tumors in the region of the Eustachian eminence may cause otitis. Five cases of Basedow's disease were cured by removal of adenoids and five others had the same cause. A child of 7, with Jacksonian epilepsy, was free from attacks four years after operation. Ethyl bromide was the anesthetic generally used.

Menière (242, July 25, '99) gives statistics of 3,700 operations, in none of which did he observe any serious consequences. He operates without anesthesia.

Complications.—P. Gallois (abst. 7, May 12) contends that the swelling of the lymphatic ganglia in the neck is secondary to some lesion in the air cavities of the face, usually adenoids, and

that disinfection of these cavities and air passages would often prevent scrofulous manifestations.

Dayez (abst. 33, July) believes that adenoids bear an etiologic relation to many cases of scoliosis, and should be invariably examined for in this disease. They are not found in every case. The naso-pharyngeal obstruction interferes with the development of the skeleton, causes the patients to sit and stand in improper attitudes, and induces a general debility, all of which have influence for evil on the spine. Out of 200 cases of scoliosis, D. is able to illustrate his thesis by twenty-six cases.

A Symposium.—A very interesting and instructive discussion of this subject before the Am. Laryng., Rhin., and Otol. Society is recorded in 3, August. J. H. Halstead opened on anesthesia (see abstract elsewhere). I. E. Kimball (1, Nov.) had done 350 adenoid operations in twelve years without serious hemorrhage. He thought the attempt to operate hurriedly was perhaps responsible for some cases of hemorrhage. N. H. Pierce considered the question of histology. Adenoids are hyperplasia of tissues normally present, and should be considered pathologic only when the functions of other parts are interfered with or when secondarily diseased. The principal mass is composed of lymphoid nodes identical with the solitary follicles of the intestine, held together by a reticulum. Normal atrophy occurs from pressure by contraction of the maturing embryonic connective tissues.

C. W. Richardson (1, Nov.), on pathology, classified in two groups: (1) A hard or fibrous type, and (2) a soft or gelatinous type. Their most frequent location is at the vault of the pharynx. He had never found them around the Eustachian orifices.

J. A. White never felt satisfied that he had made a complete extirpation of the growths, no matter what method he used. He generally used general anesthesia, started operation with the curette, and finished with forceps. He made a great deal of use of his palate retractor in examinations preliminary to operation in children over 5 years of age. F. C. Cobb found that with a thorough operation no after-treatment was necessary, except to keep

the child quiet a day or two. A. G. Root generally preferred chloroform as an anesthetic. Price Brown preferred chloroform and thought the drop method of administration made it safe. He depends on the curette, finishing with the finger in the side spaces. He does not use forceps. G. L. Richards used ether and operated with the patient in sitting posture. W. C. Phillips never thought of lowering the patient's head to prevent blood going into the trachea, as he believed all that went down went into the stomach. F. H. Koyle uses the A C E mixture and an Esmarch inhaler. L. C. Cline had seen a child of 5 years die from the use of cocaine in the hands of a colleague. He had had three bad experiences with chloroform, each time the bad symptoms occurring during the first few inhalations.

T. Harris used ether. He had had one fatality in a very young child after operation. The child was recovering from pneumonia and the obstruction was so bad that H. removed as much adenoid tissue as possible with the finger nail without anesthesia. Death occurred thirty-six hours after from meningeal complication. M. D. Lederman thought the finger a better guide than the mirror as to the amount of hypertrophy. He applied a solution of iodine after operation if there was much roughness of the vault.

R. C. Myles thought that there was much danger in drawing conclusions from one's own work alone, since in comparison with the grand total, individual experience must sink into insignificance. He believed that the statistics as to fatalities after adenoid operations were wholly unreliable. He had a fatal result in a man of 37, on whom he operated with nitrous oxide. Operation was with forceps, and hemorrhage moderate, but the patient stopped breathing and could not be revived.

The forceps should not be used by one not expert with the use of the forefinger in guiding them. Forceps used without the forefinger as a guide are pretty sure to remove tissue that should not be removed.

S. F. Snow had used bromide of ethyl a few times and liked it. S. M. Smith had used it two or three times, the anesthetiser

being skilled in its use, and had had to perform artificial respiration each time. T. R. Chambers used chloroform, taking plenty of time.

Treatment.—J. P. Morton (94, Aug.) holds that reflex effects of even moderate hypertrophy of this tonsil are so generally found that removal is indicated in every case. O. T. Freer (7, Nov. 24) uses an anesthetic and the Löwenberg forceps, claiming that more thorough removal is possible than with the curette, and consequently he has no recurrences. He claims that the operation can only be properly done by the specialist and not by the general surgeon or practitioner.

T. Bobone, San Remo, (abst. 139, Oct.) has frequently observed the rapid disappearance of adenoid vegetations in children afflicted with them who came to reside on the Riviera.

Scanes Spicer, London, (9, Aug. 11) believes that many operations for adenoids are done unnecessarily, the real source of obstruction being in the nose.

A. Decker, Hagen, (2, April) generally employs superficial chloroform anesthesia in the sitting position. He has abandoned Gottstein's curette because on one occasion a mass of adenoids fell into the larynx, causing alarming symptoms. He now uses scissors, curved to fit the vault, and arranged to catch the detached tissue.

G. A. Leland (230, Oct., '99) has 3 to 4 per cent of recurrences after operation under ether. A. Francis (Aug. 21, '99) finds recurrences not rare, and thinks they are much less likely to occur when healing of the wound is prompt. He therefore recommends operating when possible in pleasant weather to secure quick healing.

Operation, Complications.—Sendziak (abst. 2, July) records two cases bearing on the subject of complications after the removal of post-nasal growths. In two children, after adenoid extirpation under chloroform, fever appeared a few hours after, without local signs in nose, throat or ears to explain the occurrence. Later observation showed the complication to be due to malaria.

H. Cordes (139, Aug.) gives as causes of hemorrhage after adenectomy: 1. Hemophilia. 2. Disease of heart. 3. Anomalies in the course of the external carotid. 4. Use of cocain. 5. Imperfect removal, shreds being left. 6. Removal at menstrual period in women. 7. Cause unascertainable.

R. Sachs (Hamburg) (2, Feb.) records a case of *fatal hemorrhage* after removal of the pharyngeal tonsil in a boy of 10 years. The operation was done under chloroform, with a modified Gottstein curette, the tonsil being removed in one piece the size of a small walnut. Death occurred four days after the operation. The case was one of hemophilia, in which the history was not elicited till after operation.

B. S. Booth (267, Oct., '99) removed adenoids, faucial tonsils and a septal exostosis at one operation from a child under ether anesthesia. Pneumonia and basilar meningitis developed and the child *died*. [The tendency under an anesthetic is to do all the operations necessary to be done about the nose and fauces at one sitting. These parts are so situated that they cannot be made or kept aseptic, and while nature seems well able up to a certain point in these operations to destroy invading germs, yet when too large a wounded surface is produced we are likely to pass the limit where nature's unaided powers can resist invasion.]

Miscellaneous.—Arslan (282, Apr.) writes of the connection between adenoid vegetations and *diseases of the eye*. He has frequently seen inflammatory diseases of the eye disappear promptly after adenoid operations.

Chauveau (6, Nov. 11, '99) has observed several cases in which adenoid vegetations have *disappeared rapidly after influenza*.

O. Hewelke (275, No. 21, '99) records a death from *abscess* of the pharyngeal tonsil in a girl of 17. No change could be discovered in the oropharynx, but there was pain on moving the head and on pressing the transverse processes of the cervical vertebrae. Death from septicemia.

Jankelevitch (11, No. 30, '99) remarks the frequency of *adenoid vegetations in the adult* and points out the difference in

symptomatology in the disease between adults and children. Reflex phenomena are common in the former. The pharyngeal tonsil is subject to inflammation just as other tonsillar tissue and a recollection of this fact will sometimes aid in clearing up an obscure case.

E. F. Potter (2, June) records a case of adenoids in a *woman of 47*. There were the usual symptoms of the condition. Removal gave relief and microscopic examination confirmed the diagnosis.

THE MOUTH.

P. Hellat (abst. 1, Oct.) describes four cases of what he calls *psychic salivation*, in which there is continual spitting without cause. The patient at first imagines it necessary for him to spit, until finally the idea of swallowing the saliva becomes repugnant, so that he can no longer swallow it. The symptoms are, of course, those of the deprivation of the system of this secretion.

Diphtheria.—J. R. Rose (218, Feb.) had a case of diphtheria in which the primary infection was on the chapped lip, the patient being a mail clerk who moistened his thumb on the lower lip while distributing mail. There was secondary infection by the throat.

E. F. Trevelyan (9, Apr. 14) reports a case of *diphtherial stomatitis* in a girl of 15. There were no general symptoms and no sequelae. The case was thought to be ulcerative stomatitis, but the microscope revealed the K-L. bacillus.

Diphtheroid Stomatitis.—Thambusti (abst. 139, Oct.), in a 3-year-old child with high fever and enlargement of the cervical lymphatics and a false membrane covering the gums and hard palate, found the membrane to be produced by the *Oospora Doriae*, a species not hitherto supposed pathogenic to man. The tonsils and pillars were very red, but free from exudation.

V. Griffon (224, Dec., '99) describes a case of stomatitis and angina in a man of 29 suffering from pneumonia, in which

the pseudo-membrane was due to the *pneumococcus*. The patient recovered.

Epidermolysis Bullosa Hereditaria.—G. Spiess (5, B. 9, H. 3) reports a case of this disease, first described by Köbner (1886). In Spiess' case the blebs occurred only in the mouth, oropharynx and esophagus. The lightest touch with an instrument served to start the blisters. Those in the mouth the patient snipped with scissors and touched with silver nitrate, thus securing moderately quick healing. Those in the esophagus, out of his reach, caused considerable dysphagia and healed very slowly. No treatment was found of any value.

Gonorrheal Stomatitis.—Colombini (abst. 139, Oct.) reports a case of gonorrheic inflammation of the mouth in a woman. The disease began with a dryness and heat in the mouth, followed by increased saliva, severe pain, and strong fetor from the mouth. Chewing became impossible after a few days. The mucous membrane showed a diffuse redness, with flecks of a round, whitish-gray character. The tongue was much swollen. The gonococcus was abundant.

Ludwig's Angina.—G. Marchese de Luna (215, Dec. 19, '99) reports a *fatal case* of the disease in a man of 39 who refused operation at the time of diagnosis. General infection ensued. C. A. Hamann (134, Sept., '99) finds this disease to have its origin from *lymphatic infection* in consequence of lesion of the mucous membrane of the mouth or throat, and also rarely through the salivary ducts.

Tixier (abst. 139, Aug.) describes a typical case in a man of 36, *following a tonsillitis*. A very painful induration began under the chin, with enormous swelling, dyspnea, high fever, the tongue immovable against the roof of the mouth, no fluctuation. T. incised from one jaw angle to the other and worked down to the mylohyoid; cutting through this, a dram of foul pus discharged. Good drainage was provided and antiseptic dressings used and the patient rapidly recovered.

R. W. Tate (101, July, '99) reports two cases, both of

which resulted from *carious teeth*. One, a child of $4\frac{1}{2}$ years, died; the other recovered.

Plücker (13, No. 41, '99) had a case of *cellulitis* of the neck, following pharyngitis in a patient 29 years old. The abscess was freely opened by a perpendicular incision in the median line, but edema supervened and tracheotomy was necessary. Another incision was then made across the former one from one angle of the jaw to the other, the fascia of both maxillary glands divided and the salivary glands incised. P. points out the danger in such cases and advises free incision of the rigid fascia of the submaxillary gland.

Miscellaneous.—R. C. Myles (1, Jan.) exhibited before the N. Y. Academy of Medicine a patient, male, aged 59 years, with a lesion on the anterior surface of the gum above the last two molars of the upper jaw. The lesion had existed about four years and had been diagnosed by able specialists in nose and throat and in skin diseases, and by general surgeons very differently. A diagnosis of benignancy and malignancy had been made. It had been called *oidium albicans*, *ichthyosis*, *leukoplakia buccalis*, *lupus-erythematosus*, Rigg's Disease, *epithelioma*, *lupus vulgaris*, *lichen planus*, *osteosarcoma*, and had been attributed to syphilis, digestive disturbance, uric acid diathesis, and a neurosis. Some of the diagnoses were based on microscopical examination. A positive diagnosis could not be agreed on and the case is quoted to show the difficulty attending diagnosis in some instances.

Compaired (11, Apr. 14) records a case of *perforating ulcer* of the mouth in a man aged 27 in whom syphilis, tabes, tubercle, lupus and malignant growth could be excluded. For a year the teeth had been falling out and ulcers had developed on the gums. The mouth was dirty and there were large amounts of tartar. There were several ulcers, the largest 2 cm. wide by $3\frac{1}{2}$ cm. deep, occupying the position of the second and third upper molars. There never was any suppuration. Eight or nine such cases have been reported. C. gives the opinions of others and then his own as to the pathology, etc., of the disease. Dirt, want of

care of the teeth, traumatisms, etc., give lodgment to a germ which destroys the alveolar margin. The teeth fall out, atrophy and destruction of bone follows and extends till stopped by a mucous membrane. The disease may occur in syphilitic or tabetic persons or in otherwise healthy persons. The ulcers should be curetted and cauterized with 80 per cent thymic acid with careful attention to hygiene of teeth, gums and mouth.

Passini and Leiner (14, No. 28, '99) found the K-L. bacillus to play an important role in a case of *noma* investigated by them, thus agreeing with Freymuth and Petruschky, who maintain that *noma* may sometimes be caused by the diphtheria bacillus.

Schaefer (186, Sept. 3, '99) calls attention to the special exposure of the anterior pillars to the action of the *typhoid* bacillus, either directly or through its toxins, which tend to cause necrosis. The local conditions also favor the progress of ulceration.

Noble (14, No. 50, '99) records a case of apparent *inoculation tuberculosis* of the lip.

In a case of *bony ankylosis* of the lower jaw of 12 years standing, with complete closure of the mouth, Schmidt (241 B. 6, No. 31) chiseled out a piece from the ascending ramus and interposed a piece of the masseter between the two ends. Good healing resulted and the patient was able to open the mouth. The results were permanent.

E. Bonnaire and G. Keim (82, No. 62) from *bacteriologic examinations* of the mouths of new-born babes assert that in every case where the head has remained for any length of time in the cervico-vaginal canal after the rupture of the membranes, bacteria will be found in the mouth before digital exploration has been made or the babe put to the breast. In rapid labor the mouth will be found sterile after birth. They record a case of fatal septicemia in a few-days-old infant following abscesses of both parotids.

Brindeau and Mace (186, No. 17) report a somewhat similar case in a babe 5 days old in which an *apparently benign ulceration* of the roof of the mouth showed, on examination, abundant

streptococci. The ulceration spread to the alveolus and death ensued soon after from generalized erysipelas.

G. D. Murray (1, Oct.) emphasizes the fact that the mouth is the primary source of many throat affections, and urges that it receive treatment simultaneously with the throat.

Submaxillary Gland.—S. H. Dessau (70, Mar. 3) reports a case of *salivary calculus* of the submaxillary gland in a woman of 20. The unpleasant symptoms were of short duration and were precipitated by influenza. Suppuration and spontaneous rupture liberated the calculus, which measured 11-16 by 2-16 inch.

F. Hanszel (14, Feb. 15) notes 3 cases of such *calculi*. Chronic inflammation of the gland caused one, micro-organisms in Wharton's duct caused the second, long continued irritation of the left sublingual by the mouth-piece of a pipe caused the third. W. Freudenthal (285, Oct. '99) records a case.

Hoppe (13, No. 34, '99) observed an epidemic disease of the submaxillary gland, in some cases of which the parotid was also affected. Penzoldt, Soltmann, Henoch and Wertheim have called the disease "*submaxillary mumps*."

A. A. G. Guye (250 II., p. 449, '99), in a case of *purulent inflammation* of the left submaxillary gland, succeeded in catheterizing Wharton's duct and injecting an iodoform emulsion, the latter forcing out through Bartholin's and Rivini's ducts.

Tumors.—T. R. Chambers, Jersey City, (1, Apr.) reports a case of *angioma* of the anterior surface of one of the posterior pillars in a boy of 16 who had been injured 3 years previously by a stick running into his throat. There was some difficulty in swallowing, the tumor measuring $1\frac{1}{2}$ by 1 by $\frac{3}{4}$ inches. C. proposed to remove the tumor with the hot snare, and from previous experience expected no serious hemorrhage. In the discussion (C.) W. C. Phillips, J. Wright and M. D. Lederman had seen such tumors removed without severe hemorrhage; J. F. McKernon had seen two very serious hemorrhages from such operations.

W. B. Coley (103, Feb.) had a case of *epithelioma* of the mouth and tongue in which, after the first operation, recurrence

took place. At the second operation the floor of the mouth and nearly all of the tongue were removed with no recurrence six months after.

Uvula.—T. W. Kilmer (6, Jan. 27) advises examination of the uvula in all cases of persistent cough, and in case of elongation of the organ, to snip off a small portion. He prefers a simple thumb forceps and a pair of scissors curved on the flat for the operation. [The editor found that unless the uvula were put on too much of a stretch the simple curved scissors were very likely to push the tissue out before making a complete section, thus necessitating a second snip in too many instances. The instrument employed with perfect satisfaction is a Hanks' trachelorhaphy scissors. These scissors are also very useful in removing small tonsils or trimming off portions left by the tonsillotome.]

A. Katz (82, Mar. 31) observed an *abscess* at the summit of the uvula in a nursing infant which presented all the signs of a retropharyngeal abscess. Prompt relief followed incision.

L. S. Somers, Philadelphia, (6, Mar. 10) records a case of *double uvula* and calls attention to the rarity of the condition. There were no other anomalies in the case and no symptoms due to the condition.

Palate.—Brindel (11, Mar. 3) gives the experiments and arguments by which he arrives at the conclusion that the facial nerve has nothing to do with the innervation of the palate, but that the *pneumogastric* is the motor nerve of the soft palate. The lower roots of the vagus, also known as the upper roots of the spinal accessory, are the source of the palatal and laryngeal nerves, and also of the pharyngeal nerve. B. gives details of a clinical case bearing out his findings.

[His conclusions agree with those of Rousseau and Tilley. Year Book, 1900, p. 88.]

Mariau (52, Jan. 28, Feb. 4), in a series of experiments, proved that the soft palate is an *organ of taste*. "Sweet" is not so quickly nor so keenly perceived as by the tongue, but "bitter" is quickly perceived and the impression retained for some time.

He believes the lingual branch of the 5th nerve to be physiologically the prolongation of the intermediate nerve of Wrisberg, the superior root of the glosso-pharyngeal, hence the glosso-pharyngeal is the real nerve of taste.

F. Danziger, in a monograph (abst. 139, May) on the subject, "*The Deformities of the Palate* and their connection with the Nose, Eye and Ear," has brought together much valuable information and presented the results of original investigation. He considers that mouth breathing has no causative relation to the high-arched palate, but on the contrary the latter, in connection with the accompanying narrowness of the nose and naso-pharynx, is a direct cause of mouth breathing.

De Gorsse (82, Jan. 27) reports a *congenital anomaly* of the soft palate. The uvula was enclosed by the soft palate and formed a small eminence on its posterior surface.

F. Berini (287, Nov. '99) describes a case of *acute febrile edema* of one-half of the oropharynx and soft palate in a man of 35, having albuminuria. B. treated the latter and the edema disappeared.

Grossard (81, No. 5, '99) reports two cases of *tubercular perforation* of the soft palate. One was in a woman of 23 with pulmonary tuberculosis. The perforation was $1\frac{1}{2}$ cm. in diameter. There was ulceration of septum, but no involvement of epiglottis or larynx. Concentrated solution of zinc chloride was employed with success. There were two recurrences, but healing ultimately occurred. The other was a man of 40 in whom the process was observed before ulceration occurred, but treatment failed to prevent ulceration and perforation.

Baumgarten (19, No. 9, '99) describes a case to show how difficult it is at times to diagnose an *ulcer* of the palate. The ulcer was situated on the hard palate of a youth of 17 and was not sensitive to cold or warm probes. After ruling out lupus, syphilis, and tuberculosis, B. decided the lesion to be neuro-paralytic in character.

G. Baudouin (82, Feb. 3) reports a *chancre* of the soft palate. Beginning as a small pimple, in three weeks it reached the

size of a silver dollar with all the characteristics of a chancre of the mouth.

Cleft Palate.—A. H. Ferguson, Chicago, (7, May 19) describes a *new operation* for cleft palate which he has done 53 times with only one primary failure. The essential points are: 1. Cut through the mucous membrane about 1-16 inch from the edge of each segment and divide all the soft structures up to the mucous membrane on the nasal aspect of the palate, but not through it. 2. Very fine interrupted silk sutures are taken through the free borders of the flaps, the needle being passed from the mucous surface to the raw, and from the raw to the mucous surface. The sutures are tied from before backward as you proceed and the knots are on the nasal side. 3. A row of horse-hair sutures is now taken from the tip of the uvula forward approximating the remaining cut edges of the buccal surface, where possible without tension, the tying must usually be preceded by the fourth step. 4. Place the forefinger of the left hand on the hamular process; make a curvilinear incision beginning just behind the hamular process, cutting down to the bone and extending forward along the alveolar process as far as desired; rapidly raise the muco-periosteal flap with a periosteal elevator from the segment of the hard palate and immediately pack the wound firmly with iodoform gauze. Repeat on the opposite side and tie the horse-hair stitches.

If the cleft in the hard palate is wider than one-half inch a preparatory crowding operation must be first done. If the mucous membrane on the inner edge of each bony segment be not thick and well-nourished the crowding operation must be first done even in clefts of less than one-half inch. The original article is well illustrated, showing the steps.

Wolff (159, Nov. '99) in 66 children less than a year old, cured 45 by operation; in 14 the result was incomplete or the threads tore out; in 7 the outcome was unfavorable. *W. operates at 3 sittings, 7 or 8 days apart.* At the first sitting a muco-periosteal flap is made on the right side, at the second the same is done on the left, at the third the two are joined.

Carl Beck, New York, (6, June 30) makes a preliminary report on a case in which the defect was so great that the Langenbeck and the Davies-Colley operations failed to cover the cleft, and in which he took a lateral flap from the tongue with perfect success.

Tumors.—Noquet (11, No. 29) removed a *fibro-myxoma* from the velum palati of an infant 3 months old. The tumor was attached by a pedicle 1 cm. to the left of the uvula and caused frequent suffocative attacks.

H. Cordes (18, Aug. 30) reports a case of *endothelioma* of the soft palate. Removal by splitting the mucous membrane, excising, and curetting. The growth was first noticed 3 weeks before the examination.

Berbineau (11, No. 44, '99) reports a case of *primary epithelioma* of the velum palati in a man 75 years old who was an inveterate smoker. In six months it involved the soft palate from the junction of the pillars on either side and 2 cm. above the uvula, an ulcerated growth. Surrounded by inflamed zone, but no adenopathy. Removal under cocain with galvano-cautery with prompt healing and no recurrence 2½ years after.

Zwillinger (2, June) reports a case of *primary cancer* of the soft palate.

Baurowicz (abst. 2, Feb.) records a case of *cancer* of the soft palate in which the tumor had such a thin pedicle that in palpating it escaped and was swallowed by the patient.

Broeckhaert (120, No. 28, '99) had a case of *melanotic sarcoma* in a man of 72. The tumor was the size of an apricot, attached to the soft palate, brown and purple in color and bled freely on touch. Removal was chiefly by cautery.

THE TONSILS.

Function.—M. Labbé (82, Aug. 3) thinks the tonsils take an active part in the formation of the blood. The lymphocytes are here transformed into mononuclear leucocytes with incessant

karyokinesis. He also thinks that the oxidants and ferments secreted by the white corpuscles may aid in starchy digestion in the mouth. The follicles with their large extent of epithelial surface defend against germ invasion.

Masini (126, July '99) believes that the tonsils have an internal secretion. He arrives at this conclusion after experiments with the aqueous extract of the gland in which he claims to have eliminated sources of error. Intravenous injection gave results comparable to those obtained with the suprarenal extract.

Pathology.—Pirera, (63, Apr.) interested in the experiments of Goodale with reference to the absorption of coloring matter by the tonsils, went further and made experiments with microorganisms in pure culture, using indifferent saprophytes in men, staphylococcus aureus in narcotized dogs. He found that the bacteria entered the tonsil tissue much more readily than particles of coloring matter, the former reaching the interior of the follicle while the latter were stopped in the lacunar epithelium. The pathogenic bacteria entered more readily than the non-pathogenic. P. thinks that penetration occurs more readily in the normal tonsil than in the hypertrophic, the strong connective tissue of the latter offering a barrier to the germs.

Labbé and Levi Surugue (188, No. 92, '99) found in a number of cases of tonsillar hypertrophy simple increase of the parenchyma without true sclerosis. Such tonsils differ from normal ones by a functional exaggeration.

The most important article of the year on these organs is that of F. A. Packard, Philadelphia, (17, Apr. 21, 28) on infection through the tonsils especially in connection with *acute articular rheumatism*. P. quotes many reports to show that almost every organ may be involved secondarily to an angina, with the latter very probably holding a causative relation.

He defines the tonsils as groups of lymphadenoid tissue covered by a plicated and involuted mucous membrane, the latter differing only in extent and arrangement from that present in the neighboring parts.

As the tonsil has been traced from the reptiles on up through

the higher animals to man, increasing in complexity from lower to higher, they cannot be considered as evolutionary vestiges.

From experiments by various investigators it is demonstrated that previously healthy tonsils cannot only be invaded by, but can soon rid themselves of micro-organisms, and also that micro-organisms are capable of passing through the mucous membrane and the lymphadenoid tissue of the tonsil and entering the blood.

His conclusions are:

1. The tonsils are active and useful organs whose function it is to offer a barrier to the entrance of organisms into the deeper tissues at a point which, by its location and construction, is very open to infection.

2. The tonsils act in this respect as do other lymphadenoid tissues in the body, as is best exemplified by the lymphatic glands.

3. That during the course of or following tonsillitis we may have occurring most of the important complications of typical acute articular rheumatism.

4. That acute articular rheumatism is an infectious disease, dependent possibly upon no one organism, but upon a variety of bacteria.

5. That the phenomena of rheumatism can be accounted for by toxin-absorption.

6. That the toxin causing rheumatism may be produced by an attenuated micro-organism.

7. That it is possible that the frequent entrance of the micro-organism by way of the throat may explain the fact that we have acute articular rheumatism developing after an invasion of the throat rather than the ordinary septicemia or pyemia, for the reason that just beyond the port of entry there is situated a collection of lymphadenoid tissue capable of restraining the growth and virulence of micro-organisms attacking the membrane which it protects.

8. That the terms rheumatic pleurisy, rheumatic purpura, rheumatic erythema, and rheumatic sore throat should be used

with less freedom, and that it would be more correct to look upon them as the result of infection, whether accompanied or not by articular phenomena, rather than as latent, aborted or incomplete forms of a condition produced by an unknown, mysterious and intangible rheumatic poison.

The bibliography is very complete, 136 references to the more important recent contributions being appended.

T. M. Strong (31, July '99) calls attention to the anatomic construction of the supra tonsillar fossa which hinders the discharge of secretions and accumulations in the upper lacunae of the tonsils and causes such accumulations to be overlooked except by careful examination. He notices the fact observed by many that the small tonsil with obstructed lacunae is, as a rule, more troublesome than the large one with open crypts.

Tonsillitis, Etiology.—Hilbert (18, No. 43, '99) makes two great classes of acute tonsillar inflammation, the first being anginas independent of diseases of other organs or general disease, the second being anginas forming a part of such diseases as diphtheria, scarlet fever, measles, etc. H. considers only the first class, of which he makes two subdivisions—those caused by taking cold and like processes, and the infectious forms. In regard to the latter division H., from examinations of the mouth in healthy persons, found the streptococcus so universally present that he considers it to have no etiological significance in tonsillitis. The streptococcus flourishes, however, on the inflamed tonsil and may enter the system under such a condition and cause general infection.

W. J. Class (145 Vol. 7, No. 3) believes the vast majority of cases of acute tonsillitis to be of bacterial origin. He classes anginas as follows:

1. Those caused by the pneumococcus; the largest and most important group.
2. Those caused by the diphtheria bacillus.
3. Those caused by the streptococcus pyogenes.

4. Those caused by the *diplococcus scarlatinae*.
5. Those caused by the *influenza bacillus*.
6. Those caused by *staphylococcus pyogenes*.
7. Mixed infections, two or more of the above germs.

J. Sendziak, (11; No. 48, 799, abst. 4, No. 1) in a review of the literature on the subject of rheumatism of the larynx, pharynx and nose, refers to the conclusion of the commission of the British Medical Association that 25 per cent of the tonsillar inflammations precede other affections. He rejects the statistics of Fowler and Garrod that 80 per cent of cases of tonsillitis are rheumatic, likewise those of Ries of 5 per cent and accepts Gerhard's estimate of 21 per cent as more accurate. Some coryzas and laryngeal affections are also undoubtedly rheumatic.

Sendziak, in another article, (154) takes up a general consideration of this subject. He collected 250 cases from literature in which angina and acute rheumatism complicated each other. Whatever causes rheumatism is equally able to cause angina. The larynx is much less liable to rheumatism, the crico-arytenoid joint being the part usually involved. The nasal fossae and the accessory cavities may, likewise, show the rheumatic affection. Relief of symptoms by anti-rheumatics is characteristic of the affection in all these parts.

F. Siegert, (13, No. 47, '99) in a study of an epidemic of lacunar tonsillitis, reaches the following conclusions: That it is an infectious disease, easily conveyed from the affected to those near them; that its period of incubation is four days; that children under 3 years are little susceptible; and that there should be isolation on account of frequent septic and pyemic complications.

L. Le Damany (82, Nov. 15, '99) gives an account of an epidemic of simple angina due to *streptococcus* which occurred in Rennes from December, 1898, to June, 1899. In a population of 70,000 several thousand were affected. One case died of acute *streptococcus septicæmia*. Herpetic vesicles were present in the throat in 13 cases, and on the skin in many more. D. denies the difference between "herpetic angina" and "angina with herpes."

Tonsillitis, Complications.—F. A. Packard (123, Jan.) reports five cases of tonsillitis accompanied by *endocarditis* and discusses quite fully the relationship between the two diseases. He does not consider the tonsillitis and endocarditis in these cases to have been due to rheumatic disease, but the endocarditis to have followed the tonsillar infection. He believes that instead of placing tonsillitis in the rheumatic series it is more rational to consider the disease as an infection, and the endocarditis or the arthritis alone or in combination as the direct and immediate result of the entrance of micro-organisms through, or absorption of toxins from, the tonsil or pharynx.

Roeger (13, Feb. 20) found a *cardiac murmur* present in about 25 per cent of all cases of angina except the diphtheritic and exanthematous forms. In about one-half the cases the murmur persisted 7 to 30 days after the tonsillitis had healed. In more than half the cases with murmur, there was a herpetic eruption on the tonsils, buccal mucous membrane, and soft palate.

E. Aron (15, July 8) relates two cases in which the important part played by the tonsils as the primary lodging place of pathogenic germs is shown. A case of streptococcus-pneumococcus infection, and one of abdominal typhoid, followed typical follicular tonsillitis after the usual incubation period.

Dehio (166, No. 9) describes a case in a woman of 23 who, on the second day of an acute follicular angina, experienced a marked chill with temperature rising to 40° C. At the same time a peculiar eruption appeared on the back of the hands and feet, and on the thighs, neck, face and nates, the rash consisting of slightly elevated, intensely reddened spots. The general condition indicated *profound sepsis*. Fever ended by crisis on the sixth day. Convalescence was very slow. D. considers the case one of septic infection from the tonsils.

In a case of septicemia of exceedingly severe type due to tonsillar infection, C. E. Edson (119, July '99) used subcutaneous injections of normal salt solution with good results.

J. H. Abraham, New York, (7, July 21) cites a case of tonsillitis in his practice which was immediately followed by *rheu-*

matism and one followed by *endocarditis*. He gives many references to reports of other serious sequelae of tonsillitis. In the lacunar form of the disease he removes the exudate from the crypts and applies to each crypt:

R. Menthol.....	dr. $\frac{1}{2}$
Guaiacol.....	dr. $1\frac{1}{2}$
Glycerin	dr. 2
Alcohol absol.....	oz. 1

W. C. Phillips (6, Aug. 4) calls attention to certain *glandular complications* of acute follicular and acute suppurative tonsillitis when accompanied by grippe. The superficial or deep cervical glands are the seat of inflammation often proceeding to suppuration, and the condition appears as a complication of grippe. P. gives the history of one case in illustration of the disease.

Kronenberg (48, Oct. 7, '99) reports a case in which, after a nasal operation, the patient developed an angina and then an acute rheumatism. Endocarditis, pericarditis and pneumonia followed and the patient died.

Treatment.—H. J. Lipes (6, Oct. 21, '99) believes that many cases of acute tonsillitis can be aborted by the injection into the gland of a 1 to 4 per cent solution of carbolic acid. Illustrative cases are given. The same treatment was effective in ameliorating the local symptoms in diphtheria and scarlet fever. Kramer (111, Nov. '99) recommends the same treatment in recurring tonsillitis.

A. C. Frickenhaus (72, Oct. 14, '99) reports good results from inunction with lanolin in an acute case.

M. A. Goldstein, St. Louis, (1, Apr.) treats acute follicular tonsillitis radically with a small scoop fitted into a universal mirror handle. With this he enters each lacuna and scoops out the contents, then with a flexible probe armed with cotton saturated with guaiacol an application is made to each cleansed crypt. Protargol, ten per cent; trichloroacetic acid, saturated aqueous solution; and Loeffler's solution are successfully used in the same

way. Two or three applications at eight-hour intervals are all that are necessary in cases seen early. In addition to this treatment he uses locally:

R. Liq. ferri chlorid.....dr. i
Glycerinae.....oz. i

M. S.—Teaspoonful in glass of water. Gargle every 2 hours. For general treatment he uses a brisk saline purge, 1-12 to $\frac{1}{2}$ grain of pilocarpin muriate to cause sweating, and sodium benzoate and sodium salicylate in liberal quantities.

Tonsillitis, Ulcerative or Membranous.—A. Panoff (abst. 2, June) considers ulcerative stomatitis and ulcerative tonsillitis to be one disease, the fusiform bacillus and spirillae being found in both. There are two stages of the disease, the diphtheroid, in which there is a grayish false membrane on the inflamed tonsil, and a later period in which the false membrane invades the deeper parts of the tonsil, setting up a deep ulceration.

This form of tonsillitis is characterized by submaxillary adenitis, dysphagia and general pyrexia. The duration is from 2 to 3 weeks.

The original thesis contains a resume of all the published cases and 14 not previously published.

W. G. Bissell (135, Dec.) describes a number of cases of *membranous angina* of 3 varieties and draws the following conclusions:

1. The streptococcus pyogenes and the micrococcus of sputum septicemia can produce membranous anginas, accompanied by physical disturbances sufficient to result in death.

2. The oidium albicans produces pseudomembranous exudates easily mistaken for a Klebs-Löffler inflammation.

3. The only positive means of determining a Klebs-Löffler infection is by microscopical methods.

4. From the sanitary standpoint, as regards quarantine, anginas due to the streptococcus pyogenes, micrococcus of sputum septicemia, and the oidium albicans require little consideration.

Brindel and Raoult (11, No. 25) divide ulcerations of the tonsils in three classes, not including mere erosion. (1) Primary ulcerations which themselves constitute the entire disease; acute ulcerous lacunar tonsillitis, ulcero-membranous, primary gangrene, ulcerative pseudo-diphtheria. (2) Secondary ulcerations, complicating diphtheria, typhoid, variola, measles, scarlatina, glanders and tuberculosis. (3) Symptomatic ulcerations which reveal the malady which produces them; lupus, scrofulo-syphilis and malignant growths. Each of these conditions is given separate consideration, the article being a very valuable presentation of the entire subject.

C. F. Craig, San Francisco, (70, Mar. 10) in a case of membranous tonsillitis in a young man, found no K. L. bacillus but found immense numbers of a *spirillum* of large size.

Lichtwitz and Sabrazès (2, Feb., p. 92) report a case of ulcerous tonsillitis in which the false membrane contained the *fusiform bacillus* of Vincent in almost pure culture. The case was marked by its torpid and apyretic character. This same bacillus has been found in an antral empyema and a perilaryngeal abscess. Tarasewitsch (284, Nov. '99) also reports a case of tonsillitis with *fusiform bacilli* and a *spirillum*.

J. Freyche (abst. 139, June) discusses membranous and ulcerative tonsillitis and concludes them to be the same and produced partly by the *fusiform bacillus* and partly by the *spirillum*.

M. H. Vincent (49, Nov. '99) describes the same disease, which resembles diphtheria, but is less dangerous.

Nicolle and Halipre (286, Dec. 15, '99) report two cases which yielded readily to tincture of iodine.

Mariau (52, Feb. 25) had a case which he called *chancriform angina* in which the ulcer was exactly like a chancre of the tonsil differing only in its evolution and in its microscopic characters. The general health was unaffected, the lesion unilateral, the tonsil indurated and a gland enlarged. The bacilli present were large, quite unlike the K. L. bacillus, while in the deeper parts of the exudate there was a great quantity of fine spirilla. M. thought it possible that they were the ordinary buccal sapro-

phytes which had attacked the tonsil. In discussing the paper, Looten described a form of angina with a *cartilaginous-looking deposit* on the tonsil, due to the pneumococcus.

Acute Ulcer.—Wingrave (A. 2, Feb.) showed a case of acute ulcer of the tonsil in a married woman aged 32. Some sloughing occurred. Syphilis, tuberculosis and diphtheria were excluded. Healing occurred in ten days.

Chancre.—E. W. Day, Pittsburgh, (17, Feb. 10) reports a case of chancre occurring just posterior to the tonsil.

D. Grant (2, Aug.) exhibited a case (A) in a woman.

Tonsillitis Streptothricia.—P. Hellat (abst. 2, Nov.) describes a disease of the tonsils under this name in which a plenteous growth of streptothrix is found in the tonsils. He has examined 90 cases microscopically. The streptothrix appears as masses in the openings of the tonsillar crypts. The symptoms are periodic pain, paresthesia and catarrh of the pharynx and neighboring organs, tenderness and swelling of the tonsils and voice troubles. Acute tonsillitis and quinsy may result. Treatment is by discision and removal of the leptothrix masses.

Acute Suppuration.—J. L. Goodale, (6, Oct. 7, '99) from a study of 8 cases of acute tonsillitis, characterized by the presence of intra-follicular abscesses, reaches, among others, the following conclusions: The pyogenic infection of the follicles is probably secondary to a previous infection of the crypt by the streptococcus pyogenes. In two cases accompanied by circumtonsillar inflammation, the complication may have been due to an observed discharge of an abscess into the efferent lymph channel.

While the cases showed a severer systemic infection than ordinary tonsillitis yet the tonsils, in most cases, presented no clinical appearance suggesting intrafollicular abscess.

Peritonsillar Abscess.—G. A. Leland (6, Oct. 7, '99) believes that peritonsillar inflammation most frequently starts in the tonsil itself from closure of a crypt and streptococcic infection, and the products of suppuration find their way outward into the peritonsillar tissue. His favorite method of operation is to split the

tonsil with a sickle knife and then find and open the abscess cavity with the index finger.

N. H. Pierce (3, May) maintains that since by far the greater number of peritonsillar abscesses rupture in the *supra-tonsillar fossa*, this is the proper point for surgical opening instead of through the upper part of the anterior pillar, as usually advised. P. has devised a knife and a dissector for opening in the supra-tonsillar fossa, the blade of each being about one inch long and bent at a right angle to the shank.

R. Botey (abst. 2, Nov.) claims that under ordinary conditions the removal of the *upper half* of the tonsil, thus destroying the supratonsillar fossa, will cure recurring peritonsillar abscess. In some cases where there are many adhesions the entire tonsil will have to be removed.

A. O. Pfingst (171, Mar.) reports a case of peritonsillar abscess in a boy of 6 years convalescent from scarlet fever and one in a boy of 8 convalescent from measles. A. Katz (68, Apr. 4) records a very severe case in a boy of 8.

In a case in a boy of 18 years in which there had been an attack of quinsy with spontaneous rupture every month for six months, Mary E. Bates (177, Jan.) gave salicylates, iron, cascara, and syr. iodide of iron, with tincture of iodine and 2 per cent nitrate of silver solution locally for 6 months. After this for 3 months a 5 grain tablet of *thyroid extract* was given 3 times daily with the result that the tonsils contracted to normal size and gave no further trouble.

Julia S. Kapp (ibid.) tried 2 grain doses of the *thyroid extract* in an *acute quinsy*, giving 20 grains the first day, 10 grains the second with very happy result, all acute symptoms subsiding after the second day. Strychnia was also given.

Complications.—W. F. Chappell (2, June) had a case of *hemorrhage* following five days after incision through the posterior pillar for a peritonsillar abscess in a man of 27 who had had several previous quinsies. An incision was made through the anterior pillar, the cavity washed out and packed. This was done for ten days, the patient recovering. The urine showed albumen

and casts. C. found record of 10 similar cases all of which occurred after the spontaneous rupture and secondarily, no immediate hemorrhage occurring. Eight of the cases were fatal, the 2 recoveries being in cases in which the carotid was tied.

P. Wulff (13, May 15) describes a case of *aneurysm of the internal carotid* caused by wounding the vessel while opening a tonsillar abscess. A pint or more of blood was lost at the time. The aneurysm gradually developed and at the time W. saw the patient, a girl of 8 years, the left faucial region, the tonsil and wall of the pharynx were markedly protruded. The submaxillary glands being also enlarged, retropharyngeal abscess was suggested, but aspiration brought only blood. Digital compression failing to cure, the common carotid was ligated. Suppuration then occurred in the sac, although the ligating wound healed by first intention. The sac was opened and healing occurred with full recovery of the patient.

B. S. Booth (1, Aug.) reports a case of *aneurysm of the internal carotid artery* with rupture and fatal hemorrhage in a young man who had been supposed to be suffering from a chronic quinsy. J. Wright referred to a case of an enlargement of the *pharyngeal artery* which had been incised under the supposition that it was an abscess, and thus converted into a traumatic aneurysm.

Tuberculosis.—F. Baup (3, Aug., trans. by A. Miller) in 48 tonsils (48 individuals) faucial and pharyngeal, of persons otherwise free from tubercular disease, found larval tuberculosis in one pharyngeal tonsil, removed from a child of 14 years who had always lived with a tubercular grandmother. Including his own he gives a table of 841 tonsils examined by different investigators with a total of 53 tuberculous tonsils or about 6 per cent. In some of these, however, the individuals may have been otherwise tuberculous. Heredity is a strong factor in these cases. In the matter of tonsillar sclerosis, B. differs from other investigators in that he found sclerosis more common in the young than the old. The article should be read by all interested in the subject.

F. F. Friedmann (18, June 14) examined 91 autopsy cases

and 54 living subjects with reference to the question of the faucial tonsil as a port of entry for tuberculous infection in young children. He concludes that tonsillar tuberculosis exists as a primary infection from food and a secondary infection from tubercular sputum, and that the former is the more frequent in young children.

Labbe and Levi-Surugue (188, No. 92, '99) find tuberculosis of the tonsils more common than is generally supposed, and more common in adults than in children. It may be in the form of ulceration, typical tubercular nodules with caseous or sclerotic changes, or diffuse infiltration.

L. Rethi (15, July 1) found tubercle bacilli in 6 out of 100 hypertrophied tonsils removed from persons showing no signs of tuberculosis. R. believes that hypertrophied tonsils should be removed in all cases regardless of symptoms.

Ozeki (abst. 139, Sept.) reports 2 cases of primary tuberculosis of the tonsil. One in a 13-year-old girl showed marked hyperplasia and was responsible for a severe cough. The other was found post-mortem. O. also makes a careful report on 9 cases of secondary tuberculosis of the tonsils.

Gangrene.—A. C. Howe, Brooklyn, (17, Mar. 17) reports a case of gangrene of the tonsil in a man of 26. The condition followed an apparently simple sore throat in a patient of robust build but given to excessive venery and neglect of sleep. The entire tonsil sloughed out and the necrosis extended deeper and deeper, nitric acid and H_2O_2 seeming to be the only agents to check its progress and they being very slowly effective. The patient was convalescent 4 weeks from the beginning of the attack. The patient presented the symptoms of severe toxemia and lost 40 pounds. About 3 months afterward an acute rhinitis developed followed by severe epistaxis necessitating intranasal packing and repacking several times. Necrosis now seemed to occur in the nose and the patient died with all the symptoms of septico-pyemia.

Operation.—L. Harmer (14, Sept. 27) states that after every

tonsillotomy, a pseudomembranous layer covers the wound within 24 hours, the membrane consisting of fibrin, leucocytes, and necrotic fragments from the wound. Bacteria, especially cocci, are abundant, and a bacillus resembling the pseudo-diphtheria bacillus is constantly present. Tonsillotomy should not be done during epidemic diphtheria.

Ruault (abst. 2, Nov.) describes his method of removal of the tonsil. He first crushes and then cuts. His tonsil punch is not a cutting instrument. In some cases crushing a pedunculated tonsil will cause disappearance without cutting.

Gossard and Mounier (283, Oct. '99) prefer to remove with the hot snare when possible.

R. D. Fry, (134, Feb.) by a series of experiments, proved that the secretion of the tonsils is devoid of any ferment product. Finding that in ruminant animals the tonsils contain a larger proportion of mucous glands than in man, he concludes that the dry food of the former requires the greater secretion of mucus. As this necessity does not exist in man he considers the human tonsil to be a *retrograde structure*, thus differing from Packard's conclusion quoted above. Fry *enucleates* the tonsil under cocain and suprarenal. Drawing the tonsil forward with forceps, the tense mucous membrane is slit from above downward $\frac{1}{8}$ inch anterior to the edge of the posterior pillar. A similar slit is made posterior to the anterior pillar, and the slits joined above and below by oval cuts. Next, stripping back the mucous membrane from the tonsil, removal is effected with the Bosworth snare.

Carr Lane (70, July 8, '99) does not desire a bloodless operation, as he thinks the bleeding an advantage, consequently if the hemorrhage is not free he encourages it by rubbing the wound.

Operation, Complications.—F. J. Quinlan, New York, (1, April) records a case of *alarming hemorrhage* after excision of a small tonsil in a man. Hemorrhage did not begin till two or three hours after the operation. There were no anomalies of the blood supply. Saline infusion had to be resorted to.

M. D. Lederman, New York, (11, Apr.) records a case of dangerous *secondary hemorrhage* after tonsillotomy. The ton-

sil was the largest he had ever removed and the operation was done with the galvano-cautery. Five days after operation the patient, in swallowing a piece of toast, loosened up the eschar and such severe hemorrhage ensued as to require a physician's attendance.

G. B. Hope (6, Mar. 3) had a case of *primary hemorrhage* after tonsillotomy in a robust married woman of 26 who had had frequent attacks of tonsillitis and a number of attacks of quinsy. The operation was done during an acute attack, under chloroform anesthesia. Severe hemorrhage continued for 3 hours in spite of the use of all the usual hemostatics, the galvano-cautery and exhaustion finally controlling. There was no history of hemophilia.

Huber (150, Sept. 15, '99) reports a lateral *pharyngeal abscess* following double tonsillotomy in a rachitic child 2 years old, who had previously had cervical adenitis. The pharyngeal abscess was followed in a few days by an abscess in the neck.

Tumors.—J. P. Clark, Boston, (1, Feb.) calls attention to the rarity of benign tumors of the tonsil and reports a case of *papilloma* in a boy of eight. An apparently similar growth had been removed from the same tonsil by another surgeon three and one-half years before. The growth was removed by C. with a cold wire snare, with slight hemorrhage, and measured one and five-eighths inches by one inch by seven-eighths of an inch. The entire tonsil seemed involved. Recovery uneventful and patient lost sight of.

A case of *polyp* of the tonsil is reported by C. Chauveau (283, Sept., '99) in a man of 32, who was suffering from tubercular laryngitis.

Mounier (81, May-June, 1899) carefully examined five cases of the ordinary retention *cyst* of the tonsil and in each case the caseous contents proved on microscopic and culture examination to be absolutely free from micro-organisms. He thinks this finding is very much against the theory that these cysts have their origin in the occlusion by inflammation of the mouth of an ordinary lacuna. He also considers this asepsis as proof of

the innocuous quality of the numerous micro-organisms which are normally found in the tonsil.

R. P. Lincoln (6, Oct. 27) makes a supplementary report on a *recurring tumor* of the tonsil first reported on by Dr. Delavan three years ago. D. removed the tonsil entire, the hyperplasia seeming to be simple or possibly syphilitic. Eighteen months later the growth was as large as ever, although KI had been taken continuously. Two years after the first operation Lincoln did a complete enucleation. The microscope showed about the same kind of tissue as at the first. Eighteen months later no recurrence had taken place.

J. M. Ingersoll, Cleveland, (1, June) puts on record a case of *primary epithelioma* of the tonsil in a man of 42. The tonsil began to enlarge thirteen weeks before it was seen by I. and had been twice amputated with a tonsillotome in that time. There was considerable glandular involvement and operation was refused, the patient dying a few months later. I. finds that only about 120 authentic cases have been reported.

E. A. Montenyohl (71, July) reports a case of *epithelioma* in a woman of 44. Operation was refused and the patient died two years from the date of the diagnosis. Potassium iodid had no effect.

J. M. Ray (136, 1899) reports a *sarcoma* in a man of 37, in which recurrence took place after three removals, and death finally occurred from intestinal metastasis seven months from the first tonsil symptoms.

W. Downie (2, Aug.) extirpated through the mouth a *primary sarcoma* of the right tonsil in a woman of 58. The disease had existed eight months and recurrence had not occurred nine months after operation.

C. Chauveau (abst. 2, Nov.) reports a case of *lympho-sarcoma* in a man of 68, in whom all of the tonsils were much enlarged, and the cervical and axillary glands greatly enlarged without leucocythemia appearing for nearly a year. The general health was good. At a later stage the faucial tonsils and cervical glands diminished in size.

C. B. Porter (119, Mar. 22) reports a case of *lympho-sarcoma* of the left tonsil in a man of 49 which had existed 4 months. Operation, etherization through tracheotomy tube. Recovery.

Gaudier (2, April) reports a case of *lympho-sarcoma* which began in the left tonsil and spread to the lingual tonsil, epiglottis and glottis. There was a large tumor of the posterior pharyngeal wall.

THE TONGUE.

Ehram (abst. 139, Aug.), in his examinations in regard to the *sense of taste* in the healthy, found that the taste for sweet was first lost, next for salt, less for the bitter, while that for sour was never lost.

Hyperkeratosis Lingualis.—J. L. Goodale (3, Feb.) reports two cases of this disease, known also as *hairy tongue*, in men aged 50 and 65, the history giving no light etiologically. The growth of filiform papillae occupied nearly the whole dorsum of the tongue, except the tip in each case, the papillae being from one-half to one inch in length. The pathologic histology is very fully considered, excised portions from both cases being examined. His summary is: The condition under consideration is thus seen to consist histologically in a papillary enlargement and small round-celled infiltration of the corium, together with protoplasmia reticulation, nuclear degeneration, and excessive keratin formation in the epithelium, the latter on its superior surface being prolonged upward to form filamentous processes, containing peculiar refractile pigmented granules, with which a characteristic bacterium stands in intimate association. It is of interest to note that the hypertrophy affects all layers of the mucous membrane and reaches its greatest development in the posterior and central portion of the dorsum. The condition appears to be primarily of the nature of a chronic inflammation with secondary alterations in the epithelial cells.

Glossodynia.—C. Chauveau (Arch. Gen. de Med., Jan.) classifies this affection as follows: 1. Glossodynia secondary to

neuralgia of the trigeminal. 2. Glossodynia of the insane. 3. Glossodynia of tabes. 4. Hysterical glossodynia. 5. Rheumatism of the tongue muscles; glossodynia from local causes in mouth and throat. Pain is the chief symptom and electricity the best treatment.

Chauveau further (43, Nov., '99) states that glossodynia, not of central origin, may arise from disease of the teeth or pharynx, and in some cases from simple hypertrophy with inflammation of the papillae. Touching these papilla causes pain extending into the adjacent parts. The disease is more common in females and has a tedious but progressive course. The salivary flow is usually diminished. C. checked the pain in his cases by application of the galvano-cautery to the inflamed papillae.

Atrophy.—A. Goldschmidt (80, Oct. 23, '99) finds that while atrophy of the base of the tongue occurs in a fair proportion of cases of *tertiary syphilis*, it is not pathognomonic, as it may be due to other causes as well, although the nonspecific instances are very rare. J. Heller (80, Feb. 26) considers the presence of lingual atrophy as *suggestive of syphilis*. He distinguishes two modes of the origin of this atrophy in syphilis: From ulcerative processes, in which case there are scars; from interstitial processes and an obliterative endarteritis, the surface in this case being smooth.

L. A. Parry (8, Feb. 24) reports a case of *hemiatrophy* of the tongue without involvement of other parts. There was no other evidence of disease of any character, but there had been fracture of the base of the skull several years before, and the supposition was that there had been injury to the nerve in the anterior condyloid foramen.

Tuberculosis.—D. Tanturri, Naples, (63, Jan.) saw only two cases of the disease among 1,074 patients in Massei's clinic. Differential diagnosis between tuberculosis and epithelioma is difficult, a histological examination being the only available aid. In general, epithelioma tends to localize on the edge of the tongue.

while tuberculosis and syphilis prefer the center and base. The induration is deeper in epithelioma than in tuberculosis.

Didsbury (126, Vol. XXVI., No. 1), in a case of *large tumors* at the base of the tongue, in a woman of 50, in which there was dyspnea from the glottic obstruction, removed the growths with the snare with complete relief. The growths were supposed to be tuberculous, although not demonstrably so.

G. A. Syme (61, Nov. 20, '99) describes a case of *tubercular ulcer* of the tongue in a woman of 62, who had also pulmonary tuberculosis.

Miscellaneous.—Du Castel (abst. 139, July) reports a case of *lupus* of the tongue in a patient having facial lupus. The location is very rare. C. Audry and Sverseng (260, Dec. 1, '99) report a case of *lupus* of the tip of the tongue, there being no sign of the disease elsewhere. The diagnosis was not made during life nor at the autopsy until microscopical examination was made.

A. Katz (82, Mar. 31) reports a case of *peritonsillar phlegmonous inflammation* of the tongue in an 8-year-old child. He could find no report of a similar case. Dyspneic paroxysms nearly caused death.

H. C. Thomson (8, June 23) reports a case of *acute glossitis* occurring during an attack of typhoid fever, thirty days from the onset of the disease. The patient died soon after. The tongue did not suppurate.

F. Pluder (5, B. 4, H. 2) reports two cases, both in men, in which the tongue could be applied to every part of the nasopharynx, and in one could be thrust down into the hypopharynx. In both cases the tongue was broad and muscular.

H. Böhm (68, Dec. 30, '99) finds the "*geographical tongue*" of Santluss not rare in children under 2 years. It is to be distinguished from Möller's "*glossitis superficialis*" in that the latter excoriations are very painful while the former is painless. Most cases begin soon after birth and last a year or more, sometimes disappearing and reappearing. B. seems to be able to establish

some relation to tuberculosis and scrofula, but the relation is not clear.

Lingual Tonsil.—R. Levy, Denver, (6, Sept. 15) considers the various symptoms caused by disease of the lingual tonsil and the appropriate treatment. He makes the following classification: (1) Those of simple discomfort; (2) those of severe cough; (3) those of vocal distress; (4) those of respiratory distress; (5) those of dysphagia; (6) hemorrhagic cases.

The galvano-cautery is used locally and the constitutional condition met by appropriate treatment. L. finds that although a varicose condition is common at the base of the tongue, hemorrhage from this source is very rare. He also speaks of the possibility of enlargement of this tonsil without any symptoms resulting therefrom.

D. T. Vail (48, Jan. 6) discusses quite fully the *tonsillar ring* and gives the following as the symptoms of enlargement of the lingual tonsil: 1. Lump in the throat, exciting futile efforts at deglutition. 2. Early voice-fag. 3. Barking cough at puberty. 4. Constant attempts at clearing the voice, with nothing raised. 5. Relief of symptoms during meals. 6. Spasmodic asthma. 7. Globus hystericus. 8. Vague distress in the throat, which the patient cannot locate. 10. Blood-stained sputa. All of these symptoms never appear in a given case. Usually a single one predominates.

Thomas (11, Jan. 27) cured a severe *laryngeal irritation* in a woman of 30 by removal of an enormous hypertrophy of the left half of the lingual tonsil. The galvano-cautery was used.

Bayer (216, B. 4, No. 2) reports two cases of *infectious phlegmonous inflammation* of the tongue resulting from angina tonsillaris lingualis. One formed an abscess and broke, the other was followed by an attack of gout; both patients were gouty.

Tumors.—Duvoisin (abst. 9, Feb. 17) advises in *operations* for cancer, to tie not only the lingual but also the facial and superior thyroid arteries, since ligature of the lingual alone does not

sufficiently control bleeding. In case the ligature of the arteries is impracticable, tie the external carotid.

F. Powell (2, Aug.) reports a case of *cyst* at the base of the tongue in a child of 3 years. The cyst would increase in size till as large as a small hazelnut and then rupture. As it occupied about the position of the foramen caecum, Butlin considered it a case of cystic dilatation of the thyro-glossal duct and advised removal with the galvano-cautery loop and cauterization of the depression.

Morelli (2, June) had a case of *multiple angiomas* of the tongue. The nodules were from pinhead to lentil-seed sized and gave rise to bleeding. They had been present for many years and latterly increased in size and also appeared on the face, auricle, chest and fingers.

Patel (abst. 139, Sept.) found three *angioliths* in two *hemangiomas*.

T. K. Hamilton (61, Nov. 20, '99) reports a *tubular adenoma* of the base of the tongue in a man of 56.

Dorner (15, No. 29, '99) removed a *spindle-celled sarcoma* the size of a hen's egg from the tongue in a man 40 years old. Cure resulted.

W. Downie (9, Oct. 21, '99) records a case of *pedunculated spindle-celled sarcoma* of the base of the tongue in a man of 34, the fifth on record. Removal was by snare. D. also reports at the same time an *interstitial spindle-celled sarcoma* of the tongue in a man of 23. The entire tongue and adjacent tissues were removed.

R. Melchior (17, July, '99) operated on a *sarcoma* of the tongue. Recurrence took place.

Goris (256, No. 28, '99) did a *total extirpation* of the tongue for cancer in a man of 70, with no recurrence thirteen months after. In a second case of carcinoma of one edge of the tongue he *extirpated one-half* of the organ and the adjacent infected glands. The lower jaw was divided in the middle line in both cases.

L. Eliot (53, Jan. 12) excised a *squamous epithelioma* from

the tongue. Recurrence had not taken place eight years after.

H. S. Garlick (48, Dec. 16, '99) reports an *epithelioma* of the tongue in a man of 21.

PHARYNX.

S. Oppenheimer (68, Dec. 16, '99) made a study of fifty cases to determine the effects of certain *occupations* on the pharynx. The occupations investigated were those in which there was temperature elevation with dust in the air, or chemical agents, fumes, etc. Among other conclusions he states that the majority of industrial workers are affected with pharyngeal disorders, dependent to a certain extent upon their occupation.

A. Rosenberg (5, B. 10, H. 3) reviews the subject of anomalies of this region and reports two cases of *narrowing of the valleculae*. He agrees with Guinier that the valleculae are probably a sort of resting place for the food-bolus just before deglutition. Two cases of anomalous shaped pyriform sinuses are also reported.

Atrophic Pharyngitis.—R. W. Seiss (7, Oct. 13) states the present situation in regard to the atrophic pharynx, which is not a very pleasant one from the standpoint of treatment. The course of the disease from the simple chronic inflammation to the fully developed atrophy is traced. The process is one of fibrosis and is as little understood as the same process in other parts of the body. It most often follows sclerotic rhinitis, but may develop independently. Sometimes it rapidly develops after repeated and extensive intra-nasal operations, particularly cauterizations, and it may follow diphtheria, measles or typhoid fever. The appearance is very characteristic, the surface pale, smooth, glistening and tightly adherent to the tissues beneath, while instead of the rather concave appearance of the normal oropharynx, the soft cushion of mucous membrane is in so far lost that the prominence of the vertebrae gives a convex posterior wall. The varicose veins sometimes seen are due to compression by the

sclerosed tissue. The post-nasal and laryngeal regions are usually involved, while chronic tracheo-bronchitis is a common complication in later life.

For treatment Seiss depends on the cleansing spray, followed by oils containing gaultheria, cinnamon, cubebs, thymol and the like. A massage effect can be secured with the spray. Application, by means of cotton on an applicator, of solutions of thymol in alcohol and glycerin, tincture of sanguinaria and glycerin, and copper sulphate sometimes give more definite results than the nebulæ and sprays. The best method of massage is, however, the faradic current, a séance of two or three minutes being suitable. In case the pharynx is very irritable all these methods must be used with the greatest caution or damage will result. Caustics and strong astringents, especially silver nitrate, are strongly condemned. Palliation is all that is expected from treatment.

In the discussion following (Sec. Laryngol. and Otol. A. M. A., 1900), W. Freudenthal considered the disease in question to be due to the very *dry air* inspired in our homes in winter, the result of overheating with the furnace. On the other hand, G. L. Richards stated that he saw the condition often in cotton operatives who worked in a *damp air*. H. Stillson recommended teaching patients to use the tongue as a cleansing and massage agent in the pharynx and naso-pharynx. Emil Mayer recommended the use of 12 per cent carbolic acid in glycerin in these cases.

Membranous Faucitis.—Emil Mayer, New York (42, July 25) makes a report on the case of "*chronic recurring membranous pharyngitis*" described by McReynolds (see Year Book for 1900, page 54), which was under his observation for a month. The disease was due to Friedlander's bacillus. The membrane was pearly white, very adherent, leaving a bleeding surface when forcibly detached. There was no glandular swelling and no fever. Exfoliation occurred the third day and two days later the process was repeated. M. finds thirteen other cases recorded in literature.

His conclusions are:

1. That anginas due to the bacillus of Friedlander may exist in a subacute or chronic form.
2. They occasion no distress except perhaps in the beginning of the membranous deposit.
3. They may appear in membranous form, exfoliating and recurring.
4. In the chronic form treatment seems to be of no avail, the bacilli eventually becoming much less active, and the condition ceases by limitation.
5. They are probably much more frequent than the few recorded cases seem to indicate.

Pemphigus.—M. Menzel (abst. 2, May) describes five cases of pemphigus of the mucous membranes and gives his conclusions. Three types of clinical course are described: 1. The mucous membrane never free, recurrence taking place before the preceding attack has disappeared. 2. Prolonged and perfectly free intervals between the attacks. 3. Single attack, with no recurrence.

The disease is to be distinguished from secondary syphilis, ulcerative stomatitis, erythema multiforme, and pemphigus vegetans.

The following diagnostic points are given:

1. The presence of vesicles filled with clear serum, or of patches of false membrane, or of deeply reddened patches from which membrane has been removed.
2. The normal appearance of adjacent mucous membrane.
3. Absence of fever or severe symptoms, and the extreme chronicity of the whole process.
4. Frequent implication of the conjunctivae.
5. Occasional formation of scars, or adhesions between contiguous mucous surfaces.
6. Inutility of treatment.

Prognosis is favorable as regards life as long as the skin is not extensively involved, but cure is not to be expected except in the third group. Etiology is uncertain. Bacteria have been found in the blood and urine. Peripheral neuritis, chronic myelitis, sclerosis of the columns of Goll, and degeneration of the ganglia cells of the posterior cornua have been observed. Kaposi demonstrated the influence of heredity.

Treatment is unsatisfactory; arsenic is suggested and local analgesics.

Otto (166, Nos. 26 and 27, '99) considers the chronic form a very rare disease and distinguishes *two forms*: pemphigus bullosa exfolians and pemphigus adherens fibrinosa. He is unable to throw any light on the etiology. Rille (14, No. 2) reports a case of pemphigus of the mouth and pharynx.

Urticaria.—Merx (13, No. 36, '99) reports a case of chronic urticaria of the throat in a neurasthenic man of 34. The subjective symptoms were dysphagia and burning, which repeatedly appeared, disappearing in a few hours. The appearance was that of a beginning phlegmon. Local applications of 3 to 4 per cent ag. nit. and Pot. Br. were useful.

F. A. Packard (121, Oct., '99) has observed two cases of urticaria of the mucous membranes and finds references to thirty-four in literature. He thinks there is a close connection between urticaria of the skin and symptoms in the respiratory passages, especially asthma.

Miscellaneous.—J. H. Adams (99, Sept., '99) used fluid extract of ergot internally in six cases of pharyngeal congestion of tuberculosis, two having ulcerations. The result was excellent in all, the symptoms disappearing in three to five days.

W. Freudenthal (3, Nov., '99) records what he believes to be the first cases of *diabetic ulceration* of the throat published. He had five cases of severe ulceration in diabetic patients, which seemed to be due to no other cause than the constitutional disease. He makes two classes of the throat disease, one, which he calls malignant, being amenable to no treatment, the dysphagia

growing worse till death occurs; the other benign, appearing as severe in every way as the malignant, but yielding readily to treatment. Syphilis and tuberculosis could be excluded in all the cases and treatment on either of these lines was of no avail. Two of the cases were laryngeal, the others faucial. His best results were attained with his 12½ per cent orthoform emulsion, carefully applied after cleansing.

Verdos (abst. 7, Feb. 17) reports two cases of *diabetic pharyngitis*, a disease resembling pharyngeal erysipelas, but showing no tumefaction and no fever. The symptoms were dryness of the throat, difficulty in swallowing and tenacious accumulation of mucus. The local treatment consisted of mentholized sprays with sometimes an astringent such as sodium bichlorate.

Escat (abst. 139, Sept.) records a case of *zona symmetrica* of the oropharynx. The patient was a tabetic. The same writer (260, Sept. 19, '99) divides the pharynx into the usual three parts and discusses the causes and treatment of *hemorrhage* from each. The causes treated of are chiefly surgical.

W. Freudenthal (105, Mar. 31) reports a case in which a *fistula of the pharynx* resulted apparently from disease of the ethmoid cells and frontal sinus, being completely relieved by treatment of those parts. He thought the pus first burrowed down into the antrum and from there to the pharynx.

S. G. Dabney (42, July 10) finds the most frequent causes of "*throat coughs*" to be (1) elongated uvula; (2) granular pharyngitis; (3) laryngitis; (4) enlarged lingual tonsil; (5) hypertrophy or chronic inflammation of the faucial tonsils; (6) adenoid growths.

Throat coughs usually result in little expectoration. Acute enlargement of the uvula he treats in the usual way. Chronic elongation he relieves by snipping off the extremity with simple curved scissors, being careful not to pull with the forceps and thus get too much mucous membrane.

Follicular pharyngitis is very properly considered adenoid in character and treated with the electro-cautery. Enlarged lingual tonsil he finds to be the cause of cough in a limited num-

ber of cases, and treats by abscission or cautery. The editor has seen the enlarged lingual tonsil acting as a lid-catcher to the epiglottis without causing cough, but such a case only shows the degree of individual toleration. Offending tonsils, faucial and pharyngeal, are removed.

G. L. Richards (68, Aug. 5, '99) discusses very fully the subject of *reflex cough* and illustrates various forms by a series of cases.

Le Gendre (253, June 23) had a case of hematemesis in a young woman who had a *false membrane* containing diphtheria bacilli in the throat and a diagnosis of ulcer of the stomach with diphtheria was made. Two weeks later it was learned that the symptoms were all due to hydrochloric acid swallowed by the patient.

Syphilis.—F. de H. Hall, London, (2, April) in a discussion of this subject, alluded to an interesting and instructive case. The patient, a man with a syphilitic history, presented himself with a *gumma* in the throat. Under large doses of KI he improved and was discharged as cured. A year later he came again with the same complaint, received the same treatment, was improved and discharged. A few months later he appeared for the third time. This time the KI had no effect and he eventually died of malignant disease. This case shows that a diagnosis made by KI cannot invariably be depended on.

J. O. McReynolds (136, 1899) reports two cases of *multiple papillomata* in mother and child, the pharynx being affected in the mother, the tongue in the child. Both were robust and healthy, but specific treatment gave prompt relief.

Persistent Thyro-Glossal Duct.—G. E. Armstrong (103, Dec., '99) reports a case in a boy aged six years. A pea-sized lump in the median line about 3 cm. below the hyoid bone increased to the size of a filbert and the skin over it became inflamed. An incision discharged a colloidal material. Scraping failing to obliterate the sac, the cyst wall and duct were dissected out, with cure.

A. T. Bazin (58, Nov., '99) had a similar case in a young

man of 25, in whom the first swelling occurred as the result of injury to the neck at the age of 11 years. This swelling was the size of a marble and one inch below the cricoid. After incision the discharge continued for two years, when the cavity was opened, curetted and injected with irritating fluids, healing occurring in six months. At the age of 24 a nodule appeared again during an attack of sore throat. This was removed and a catgut drain introduced into the sinus, and healing occurred.

I. W. McIntosh (9, May 6, '99) reports a case in a woman of 21, with an enlarged thyroid gland, who had an offensive discharge in her throat, without vomiting or coughing, and with no catarrh. Pressure on the gland produced the discharge. Inunctions over the thyroid with lanolin and iodoform cured the discharge in one month.

J. Gugenheim (139, Nov.) saw two cases of congenital fistulae in brothers. In both cases the inner opening was in the tonsillar region. In one the external opening was at the inner edge of the sternocleidomastoid, half way between the angle of the jaw and the thyroid cartilage. In the other, 3 cm. above the clavicular joint, midway between the inner and outer edge of the sterno cleido mastoid.

Retropharyngeal Abscess.—M. R. Ward, Pittsburgh, (2, Sept.) reported two cases of this disease in children $2\frac{1}{2}$ years and 6 months of age, respectively, and called attention to the points that these cases were much more frequent in infancy than in adult life and were usually seen by the general practitioner rather than the specialist. The condition is not easy to recognize in infants under 1 year old.

G. G. VanShaick (71, Feb.) advises *emptying the abscess by a trocar* before incising, so as to avoid danger from flooding the larynx with pus. Opening must be in the middle line to avoid hemorrhage. The external operation has advantages, the incision being made along the anterior border of the sternomastoid, but it is not always possible to reach the pus-cavity in this way.

W. Schmidt (124, Mar.) points out the *dangers of opening*

through the mouth and states that the operation of choice is by an incision along the inner border of the sterno-mastoid, penetrating to the outer side of the jugular vein. S. reports fifteen cases, two being tubercular; the rest he classes as idiopathic. The oldest of the idiopathic cases was only 3 years of age.

Traver (11, No. 22) describes a case of retro-pharyngeal abscess of large size in a babe of 11 months, which had suffered from cervical adenitis from the age of 7 months. The abscess was opened with the child in the upright position, with the result that asphyxia occurred from the great amount of pus. Resuscitation occurred after fifteen minutes of rhythmical tongue traction and artificial respiration with flagellation of the cardiac region. [This report certainly shows that the upright position is not the proper one for opening retropharyngeal abscess.]

Marton (214, No. 6) thinks that *spontaneous recovery* from retropharyngeal adenitis without suppuration occasionally occurs.

G. Silverthorn (abst. Nov. 17) reports a case in a child less than a year old following an *attack of measles*. Operation through the sterno-mastoid with recovery in one week.

U. Melzi, Milan, (2, Jan.) reports a case in a child of 2 years and gives the reasons for his conclusion that the pharyngeal abscess was secondary to a purulent middle ear disease.

Foreign Bodies.—G. W. S. Farmer (9, June 9) reports a singular case in a man of 21. The man complained of swallowing a pin, which stuck in his throat. Digital examination revealed an apparent foreign body just under the mucous membrane, close behind the posterior pillar of the fauces. The body was removed and found to be a *thin piece of bone*, tipped with hyalin cartilage, and was supposed to be an ossified stylohyoid ligament, but no similar condition could be detected on the opposite side.

L. Lack (2, July) removed a *brass curtain ring* one and one-half inch in diameter and of the thickness of a small eustachian catheter from the pharynx of a child 9 years old, in whom it had been lodged for eight years and three months. The upper

part was free in the post-nasal space, the lower part was free behind the arytenoids, while the sides were embedded beneath the pharyngeal mucous membrane. The child had been examined at a hospital after the accident occurred, but the ring was not discovered, and the symptoms gradually disappeared.

Malignant Tumors.—Schech (19, No. 10, '99) no longer regards malignant pharyngeal tumors as rare, and reports seventeen cases, of which fourteen were primary, four being *sarcomata* in the region of the pharyngeal tonsil. The growths occurred in all parts of the pharynx. All the cases died from operation or recurrence. Arsenic, pyocetanin, alcohol and phenol injections, electrolysis and the galvano-cautery were tried without results. He recommends cocain, eucain and orthoform for the dysphagia.

Delagénère (abst. 2, June) advocates *tracheotomy* preliminary to all operations in the oro- or naso-pharynx in which there is likely to be much bleeding.

Poncet and Birard (abst. 2, July) discuss the so-called *glandular form of cancer* of the pharynx, which during a part or the whole of its evolution shows nothing more than the involvement of the cervical glands. In such a case dysphagia and pain may be absent and exploration of pharynx and larynx by finger and mirror may be negative. The character of the adenitis leads to diagnosis of latent cancer. The tumor may later give rise to manifest troubles, but sometimes the case proceeds to a fatal issue without a determination of the original seat of disease. At the autopsy a small ulceration in the pharyngo-laryngeal groove or in the tonsillar fossa may show the primary disease. Sometimes only induration of the submucous or muscular layers may be found. The authors published a case of this latter class in which there was a malignant tumor of the nature of rhabdomyoma mixed with striated muscles of the pharynx.

A. Esquerdo, Barcelona, (301, No. 4 and 5) calls attention to the difficulties of diagnosis in many cases of *latent epithelioma* of the throat and holds that a careful laryngoscopic and rhinoscopic examination should be made in every case of glandular swelling about the face or neck.

Schech (19, No. 10, '99) reports on seventeen pharyngeal tumors observed by him, fourteen primary, three secondary, four sarcomas of the naso-pharynx, two sarcomas and one carcinoma of the pillars, three carcinomas of the posterior wall and two in the hypo-pharynx.

A case of *carcinoma* is reported by G. Kiaer, Copenhagen (1, Apr.), in a man of 45, in previous good health and with negative history as to syphilis. The disease was in the glosso-epiglottic region. Dysphagia, but no other pain. C. G. Levison, San Francisco (1, Apr.), reported on an operation attempted for carcinoma of the tongue and tonsil in a man 77 years old. L. describes Cheever's, Czerny's and Mickulicz's operation and then the one done on the patient. Preliminary tracheotomy was done and the pharynx plugged with gauze, thus protecting the larynx from blood. An incision was made from the mastoid to the greater horn of the hyoid. The periosteum was raised from the angle of the jaw and one and one-half inch of the ascending ramus removed with the Gigli saw. Every part of the diseased tissues was easily within reach, but the infiltration was so extensive that removal was not attempted. The operation was comparatively bloodless. The patient rallied well, but thirty-six hours after, he began breathing rapidly and died in a few hours. According to writers generally, radical operation for cancer of this region is unwarranted, even in the early stages, as results are almost always bad.

ESOPHAGUS.

Esophagoscopy.—G. Gottstein (238, vi, 4 and 5) describes the technique of esophagoscopy. The patient lies on his right side, the head slightly drawn back, the physician seated on a low chair at the head. The tongue and esophageal entrance are swabbed with 10 per cent cocain. The chief obstacle to introduction of the instrument is at the entrance. Once in position a Casper panelectroscope is applied. The procedure is not more dangerous than others of like nature.

Stricture.—B. F. Curtis (103, Mar.) had two successful cases in children aged two and nine years. The strictures were cicatricial and were cured by gastrostomy, the "string" method and permanent dilatation by elastic tubes.

G. Killián (13, Jan. 23) diagnosed diverticulum of the esophagus in two cases by means of the esophagoscope.

G. Holzknecht (18, No. 36) uses the Röntgen ray in the detection of esophageal stricture, the patient swallowing bismuth while the examination is taking place. Transillumination should be from behind on the left towards the front and right or the reverse. In this position the passage of the bismuth can be followed clearly, the use of a bougie being avoided.

G. B. Johnston (149, Dec. 5, '99), after failing to insert the esophageal bougie in a case of stricture, did a gastrostomy and was then able to accomplish dilation.

C. Symonds (2, July) exhibited a man (A.) of 63 who had worn a tube for esophageal stricture for twelve months with great comfort. The last tube was still in position and useful after eight months. The disease was supposed to be malignant.

Tuckerman (111, Jan.) dilated an esophageal stricture of three bands, seven inches down, by means of the Wales bougies slipped over an ordinary whale-bone esophageal bougie as guide. Treatments were weekly and the size of bougie was increased from 27 French to 45 French.

Koepelin (257, July 8, '99), in a case of severe stricture from swallowing lye, attained marked improvement by permanent dilatation. Death occurred and the autopsy revealed a small lung abscess with putrid pus, which K. attributed to the catheterization, and thought gastrostomy would have been a better procedure on that account.

Butlin (2, Aug.) gives the particulars of a case in which the introduction and retention of a vulcanized tube for stenosis of the esophagus in a man of 29 was followed by a perichondritis of so severe a type as to require tracheotomy. The tube was worn five or six weeks.

Foreign Bodies.—Heaton (47, May) reports a number of cases in which foreign bodies were removed from the esophagus and discusses the indications. In most cases the foreign body can be removed by the coin-catcher, horse-hair probang or esophageal forceps, only soft bodies should be pushed on into the stomach. The various operations are considered, and the usual statement made that if the esophagus be not much damaged by the impacted body the wound may be immediately closed, while if much damage has occurred the wound should be simply packed.

H. L. Maitland (61, Nov., '99) reports three cases. In one, a woman of 29, a portion of a dental plate had been swallowed four months before. The Röntgen ray failed to locate. Tracheotomy and esophagotomy were necessary, the esophageal wound being left open and packed with iodoform gauze; healing resulted in five weeks.

In the second case, a child of eight months had swallowed an open safety-pin. The skiagraph revealed it one inch below the sternal notch, point upward. It was pushed into the stomach with a bougie and passed by bowel four and one-half weeks later. The third, a miner aged 34, had swallowed a safety-pin three weeks before. An abscess the size of a small orange appeared on the side of the neck at the level of the cricoid. The pin was withdrawn through an incision in this swelling, and the patient recovered.

W. A. MacKay (8, Dec. 2, '99) operated on a case in which a piece of bone had been lodged opposite the cricoid for six weeks. The esophageal wall was infiltrated with pus and sloughing shreds. The wound was left open, a glass tube passing to the esophagus. The patient took liquid nourishment slowly and got along well without an esophageal tube, the wound being dressed after every feeding. Healing occurred in a month.

G. W. King (68, Oct., 27) removed a whistle from the cervical esophagus of a child of six years by esophagotomy. Efforts at removal with forceps had failed and caused considerable inflammation. The wound was at once closed with sutures and perfect recovery ensued.

Vignard (251, Dec. 16, '99) removed a 5-centime piece from a five-year-old girl with the Graefe instrument. The coin was opposite the seventh cervical vertebra. F. Barbera (139, Sept.) removed *per vias naturalis* a bone from the thoracic esophagus of a man of 48, where it had lodged for thirty-four days.

In a paper by Segond (abst. 139, May), a case of removal of a *tooth-plate* by external esophagotomy is recorded and several authorities are quoted. S. advises removal by the natural passage only in the case of smooth bodies. Lucas-Championniere spoke of the danger in the use of the Graefe instrument and mentioned a case of Broca's in which, during removal of a piece of bone through the natural passage, the carotid was torn and the patient bled to death. Reclus thought it advisable to use the Graefe instrument before resorting to esophagotomy. Poirier would attempt removal in smooth bodies, but if the object became fast would resort to esophagotomy immediately.

Phocas (263, Oct. 1, '99) removed a 10-centime piece from the esophagus of a boy of 7 without difficulty, with the Kirmisson instrument, a much lighter instrument than Graefe's, which latter he cautions against using. The coin was lodged at the level of the ensiform process. G. A. Syme (264, Aug., '99) removed a penny and a button from the esophagus in boys aged 11 and 7 years.

Successful esophagotomies for removal of foreign bodies are reported by G. G. Eitel (70, Sept., '99), an impacted tooth-plate of six years and four months' standing. By Ruoth (139, Aug.), a piece of sheep's vertebra. By C. H. Magee (71, Dec., '99), a coin.

Rupture.—Bowles and Turner (2, May) report a case of rupture of the esophagus from vomiting in a woman of 62. The vomiting occurred several times and was followed by collapse and epigastric pain, with agonizing pain after swallowing. At first the symptoms suggested abdominal injury, but after six hours it became clear that the trouble was in the thorax. Emphysema of the neck and face occurred seventeen hours after the onset of the trouble and death occurred five hours later. Autopsy showed

a longitudinal rupture of the esophagus, five-eighths of an inch in length, one and one-half inches above the diaphragm, and some brownish fluid in the pleural cavities, the posterior mediastinum containing the same fluid. There was no other disease. A table of sixteen other cases hitherto recorded is appended. In a later communication (8, Aug. 4) Turner places the number of recorded cases at about twenty-five. A similar case of rupture is reported by Heintze (193, July 14).

E. J. McWeeney (8, July 21) reports a case in a man of 40, of alcoholic habits, in which rupture took place during vomiting and death occurred twelve or fourteen hours later. The findings were much the same as in the case of Bowles and Turner. The author discusses all the previous cases, sixteen in number, of which he finds record, and makes a very valuable article. He includes only cases of rupture of the healthy esophagus from other causes than perforation by foreign bodies, etc. A statistical table is constructed.

Of the seventeen cases, sixteen were men; the average age was 42 years; there was a history of excessive alcoholism in eight of the cases. All were due to vomiting or retching. In all cases there was pain, usually agonizing in character, and followed by collapse. The position of the sufferer was usually sitting with the body stooped forward. Swallowing and eructation usually increased the pain. Emphysema was the most constant and striking symptom, appearing first in the neck, spreading upward to the face and downward as far as the thighs in some cases. One case survived seven and one-half days, the other fifteen cases, in which the period was noted averaged seventeen hours. In all cases save the one surviving seven and one-half days the rupture was just above the diaphragm and all save one were longitudinal. After discussing the views of various authorities on the question of etiology, the author gives his conclusions that the two main factors operative in causing rupture of the macroscopically normal gullet are (a) softening of the coats and (b) sudden increase of pressure from within. The softening he considers due partly to intravital digestion and partly to inflammatory infiltration. The

intravital digestion is to be accounted for by circulatory disturbance and prolonged sojourn of peptic matters in the gullet from prolonged retching.

Tuberculosis.—W. Bartlett, St. Louis, (3, Nov., '99) gives the pathologic findings in two cases, and discusses quite fully the literature of the subject. He finds the condition very rare, Hasselmann having been able to collect but sixteen cases from the literature of sixteen years preceding 1895. In both B.'s cases the disease was secondary to lymphatic tuberculosis, there being in one case no less than five fistulous openings from cavities in as many different peribronchial and posterior mediastinal lymphatic nodes, in the other case only one such opening. B. urges the utility of the Miculicz esophagoscope in diagnosis of such cases, and the necessity for every surgeon familiarizing himself with its use in the healthy esophagus. The various operations for resection of the organ are spoken of and the recommendation made that such operations be done in suitable cases, with a view to cure in primary and prolongation of life in secondary cases.

Diverticulum.—Butlin (A. 2, Feb.) reported a case of esophageal pouch in which he had successfully removed the pouch. This makes five cases on which he has operated, with four recoveries. No such pouch should be removed until a sound is first passed from the mouth to the stomach.

Tumors.—A. A. Eshner (117, Feb. 26) reports a case of *carcinoma* in a man of 60, the cancer causing stricture eleven and one-half inches from the teeth. The patient suffered with various other diseases, including tuberculosis of both lungs and parenchymatous and interstitial nephritis.

C. A. Ewald (18, May 31) describes a case of *carcinoma* in a woman of 64, treated with a permanent cannula. The growth caused almost complete stenosis opposite the tracheal bifurcation.

O. Fischer (246, No. 31, '99) reports a case of *primary carcinoma* of the esophagus with secondary development in the trachea.

W. Permewan (146, July, '99) performed *subhyoid pharyngotomy* in two cases for the removal of esophageal tumors. In one a *fibro-myxoma* was removed, but the patient died on the tenth day of septicemia and septic bronchitis. In the other case a *carcinoma* of the top of the esophagus was partially removed, but the disease was too extensive for complete removal. The patient made a good recovery from the operation.

The author concludes as follows: (1) Subhyoid pharyngotomy is a justifiable operation. (2) Preliminary tracheotomy is essential and the tube should be left in till the pharynx is healed. (3) Success depends on the after-treatment, which should consist in leaving the wound open, packing with gauze, and feeding by the esophageal tube.

SUPERIOR MAXILLA.

1
Carl Seiler (71, Nov., '99) reports a case of eburnification of the superior maxilla in a woman of 23, in which both nasal cavities were completely stenosed, anteriorly and posteriorly, by a bony growth which obliterated the left antrum and caused protrusion of the left eye. Nasal respiration and the sense of smell had never been present.

An incision was made from the inner canthus of the left eye, down the side of the nose around the alae nasi, across the lip to the columnar cartilage, then down the middle of the upper lip. The flap was pinned back to the ear. The bony growth was chiseled away so as to form a new antrum, and to clear the nasal passages. The normal contour of the nose was preserved, nasal respiration established, the sense of smell developed, the scar on the face left scarcely visible, and the former disfigurement from the growth removed.

Ropke (abst. 2, June) reports cases of *acute osteomyelitis* of the upper jaw in very young infants. The disease is characterized by swelling of the cheek, discharge of pus from the nostril, swelling of the hard palate, and fistulae either in the canine

fossa or palate. Necrosis of the bone occurs. The disease is to be distinguished from antral disease.

Tumors.—P. Jacques and G. Michel (11, Mar. 17, 24), in an article on *Dental cysts* of the superior maxilla, divide them for convenience into two classes. The anterior are situated between the external and internal plates, in the region of the incisors, canines and bicuspid, and develop outwards towards the face, expanding the external plate. They do not push into the antrum. The posterior cysts arise in the region of the molars and push up into the antrum with the floor before them.

The cysts arise from paradental epithelial debris. Anterior cysts are easily diagnosed. Posterior cysts are more difficult and may exist for a long time before detection. Transillumination, puncture of antrum and other measures of the kind aid in the diagnosis. Only radical treatment can cure. In anterior cysts resect the external wall freely and remove or destroy all the lining membrane. In posterior cysts open the cavity through the canine fossa and remove the lining membrane, then cut away the wall separating the cyst from the antrum.

P. Berger (82, Dec. 13, '99) reports a case in a boy of 13. The cyst fluctuated and presented all the signs of a periostitic or *radiculo-dental cyst*. On being opened it was found to contain a supernumerary tooth, and the author insists on the impossibility of making a diagnosis in these cysts till they are opened. Operation should consist in free resection of the anterior wall of the cyst, complete removal of contents, packing for a few days with gauze, then frequent washing out. Curetting should only be done in case suppuration has occurred.

F. C. Cobb (abst. 1, Oct.) states that in these cases the *upper jaw is distended* and hard as bone. Pain is usually slight and that is at the roots of the teeth. On puncture with a trocar a brownish fluid escapes. The principal points in treatment are evacuation and packing and careful dental treatment.

Goris (256, No. 35, '99) reports a case of *carcinoma* which began in the orbit, was removed, and returned in the upper jaw and the ethmoid bone. G. then did tracheotomy, tamponed the

pharynx, and removed the upper jaw, zygomatic process, nasal and ethmoid bones and a good part of the cheek of the right side. The eyeball and lid were removed at the first operation.

Chavannez (abst. 139, July) removed an *osteosarcoma* which recurred three years afterward on a rib and was again removed. No recurrence several months later.

R. H. Harte, Philadelphia, (7, July 7) did an excision of the superior maxilla for *tumor* (kind not stated), with recovery on the tenth day.

C. A. Haman, Cleveland, (17, Apr. 14) removed the entire right superior maxilla from a child eight and one-half years old on account of a *spindle-celled sarcoma*. Recurrence had not taken place two and one-half years later.

Inferior Maxilla.—W. H. Hudson, La Fayette, Ala., (121, Feb.) reports two cases of *sarcoma* of the lower jaw, both of which were operated successfully. Death from recurrence occurred in one, a negro girl of seven years. In the other, recurrence had not taken place five months later.

T. M. Manley (262, Aug.) removed a small tumor from the lower jaw of a young woman. Rapid and enormous recurrence took place in six months, respiration and deglutition being very difficult. At the second excision the weight of the tumor was twenty-seven ounces. The microscope showed simple *fibroid*, and no further recurrence took place.

Actinomycosis.—C. A. Porter (17, Apr. 21), in a paper on actinomycosis, considers the disease to be not infrequent, as he saw four cases of the maxillary form in one week at the outpatient department of the Massachusetts General Hospital. His paper includes notes on ten cases of the maxillary form. The infection seems to enter usually through a carious tooth or from a foreign body through the mucous membrane of mouth or pharynx. The symptoms of the disease are given, but P. believes a diagnosis should not be made without the microscope. As few cases enter the hospital with advanced signs of the disease, it seems certain that many recover after simple incision or natural

rupture. The infrequency of the granules in the walls of the abscess seems to show that the surrounding connective tissue probably proves an effective barrier to the spread of the disease.

For treatment, simple opening, curetting and drainage is sufficient in many cases, but, when possible, excision of the inner half of the wall seems surest. Cauterize the wound with strong tincture of iodine. Drainage should be external. Potassium iodide has been beneficial in many cases. P. thinks that more careful examination of "ordinary" alveolar abscesses and cold abscesses in the submaxillary region would prove that the disease is more common than has been thought.

J. Rührh (103, Feb.) has collected reports of seventy-two cases of actinomycosis from American sources. He reports two cases, in one of which the disease was caused by chewing wheat grains with a carious tooth.

LARYNX.

Innervation.—G. Avellis (5, B. X. H. I.) is able to throw new light on the subject of the *motor* laryngeal innervation from a study of the case of a man who had been stabbed in the left auricle just beneath the meatus. Paralysis of the palate, tongue, thyroid and external laryngeal muscles, crico-thyroid, ant. thyro-arytenoid, and cervical muscles occurred, due to injury of the hypoglossus and branch of the accessorius before its bifurcation. The vagus was uninjured or very slightly so. A. believes that combined tongue, palate, larynx and neck paralysis can be provoked by a narrowly limited focus beneath the temporal bone, injury of the vagus being excluded if laryngeal sensibility be unaffected. He thinks that the matter requires further investigation, as recent teachings fail to agree with his finding.

C. Chauveau (abst. 2, Nov.) reports a case of hysterical paralysis of the left vocal cord with accompanying paresis of the sterno-mastoid and trapezius of the same side, anesthesia and paresis of the soft palate and difficult deglutition, and thinks it favors the view that the spinal accessory nerve is the *nerve of phonation*

E. Zuckerkandl (19, No. 1), from a close comparative anatomical study of the pharynx of a prominent basso singer, concludes that in shape, development and location of muscles, the singer's larynx is *especially adapted* for its uses.

False Cords, Function.—Donogany (19, Jan., '99) gives the results of his researches as to the functions of the vocal bands. Out of 1,000 patients, 150 were selected who did not retch when examined, thus excluding the action of the constrictors of the pharynx. During normal phonation the false cords moved in 62

per cent of the cases examined, the movement being always an approximation. The movements were most marked when short notes were sounded in rapid succession, every one of the 150 showing them under this procedure. Vicarious movements varied according to the amount of interference with the true cords. The false cords may touch at one point (generally the middle) or throughout their length, assuming the function of true cords, but producing a rough voice capable of little modulation. In pathological cases the false cords act as supplementary glottis closers.

When the closure of the glottis is normal, the movements of the vocal bands may be considered, (a) as associated movements connected with the action of the vocalis muscle, or, (b) as active movements contributory to the closure of the glottis.

Examination.—M. Thorner (6, Mar. 10) discusses the use of the tongue depressor of Kirstein and that of Escat in the *direct examination* of the larynx in young children. Owing to the peculiarities of the larynx in children, inspection by any method is much more difficult than in adults. The epiglottis is curved on the flat, forming a narrow longitudinal groove; the hyoid bone overlaps the upper margin of the thyroid cartilage; and the axis of the larynx is tilted slightly backward. The examination is not very satisfactory, the vestibule of the larynx being about as far as he could see ordinarily, only in very rare cases getting a view of the glottis. The method is fully described and the hope is expressed that it may yet be developed into a great aid in the examination of these very difficult cases.

A. Kirstein (174, Apr., '99) has an article on the subject of *autoscopy*. He considers that autoscopy must take its place as a valuable method of examination in laryngeal work, and that it will render esophagoscopy practicable. K. does not think the portion of the tongue behind the circumvallate papillae is any more sensitive to firm, steady pressure than the middle of the organ.

Abductor Paralysis.—N. L. Wilson (1, Sept.) makes a plea for early operation in *bilateral abductor paralysis* of the vocal

cords. He shows by statistics that in the true paralyses the chances of sudden death are very great, the patient dying of asphyxiation before operation can be done. The operation generally recommended is tracheotomy, but since most patients strongly object to the discomfort and unsightliness of the external tube, W. suggests that intubation be practiced, or, still better, the operation described and done successfully by O'Dwyer, the removal of a part of one or both vocal cords so as to establish a permanent opening. W. gives the history of a case in which an operation was refused and sudden death resulted. A table of thirty cases collated by Wilson is appended and reference made to eighty-eight other published cases.

In the discussion of this paper (Soc. A.) (1, Sept.) O. Joachim cited a case which had come to him already tracheotomized and in which he did a *thyrotomy* and removed both vocal cords. The man could then breathe with the tracheal opening closed, and passed from observation. A. G. Root had recently had a case in which symptoms became so urgent inside of two weeks that a *tracheotomy* was necessary, the patient yet wearing the tube.

T. H. Halsted had seen two cases within the year. In one the family physician advised against tracheotomy, and *sudden death* occurred a few days later. In the other, the symptoms were not urgent enough for operation, and the patient, a young man without syphilitic history, *recovered* under iodides.

F. C. Cobb had had a case in which *tracheotomy* was necessary.

J. Solis-Cohen preferred *tracheotomy* in these cases and patients who refused operation he urged strongly to carry a tracheotomy tube always with them to show to the physician called in emergency. He had known this to have saved life in two or three instances.

G. Geronzi (261, July 6, '99) discusses the question as to whether it would not be advisable in cases of double abductor paralysis to *resect the recurrent laryngeal nerve* and thus relieve the patient of the danger of sudden asphyxiation. He thinks the

operation would be quite justifiable when there is no hope of restoration of the function of the posterior crico-arytenoid muscle.

E. Ausset (52, Jan. 21) gives the history of a case of dyspnea of two years' duration in a child three and one-half years old. The symptoms are those of laryngeal stenosis, respirations twelve to fifteen per minute, inspiration and expiration both much prolonged. Pulse, 96 to 108. Little cough, no suffocative attacks, no cyanosis, no venous distension in neck or thorax, no epistaxis. No tumor in neck or maxillary regions. Nothing abnormal in the chest. Larynx appeared healthy on examination. Large adenoids were removed without effect. A. discusses the case thoroughly and concludes that there is an *abductor paralysis*, probably due to pressure on the recurrent laryngeal by an enlarged gland. Intubation relieves, but is not available on account of ejection.

J. Portela (abst. 139, Sept.) reports two cases of abductor paralysis due to syphilis, of such severe grade as to require tracheotomy. Recovery occurred under specific treatment.

Recurrent Paralysis.—F. Semon (2, Mar.) exhibited a case (A) of tabes with almost *complete laryngoplegia*. The patient was a man of 40, who had had syphilis five years before and had received but little treatment. There was complete recurrent paralysis, being the first case S. had ever seen in tabes and the second case on record.

J. F. Culp (6, Nov. 3) reports a case of recurrent laryngeal paralysis in a man of 36, in which *recovery occurred* in six months under nux vomica internally and electricity locally. The man was a heavy smoker, and a public speaker. The cause of paralysis could not be located, except as a neuritis of the recurrent laryngeal.

Paresis.—Grabower (80, Oct. 30, '99) thinks that in some cases in which a diagnosis of paralysis of one or more laryngeal muscles is made, a closer examination would reveal that the limited motion is due to a *mechanical hindrance*. A case of his own is cited which seemed to be a paralysis of the right posterior crico-arytenoid muscle with secondary contracture of the right adduc-

tors, which he believed, however, to be a case of spurious ankylosis of the crico-arytenoid articulation.

C. C. Rice, New York, (6, Sept. 15) has had two cases of partial paralysis of the vocal cords, which he attributed to the *over-use of the telephone* while sitting in a cramped position with the head thrown forward.

C. Chauveau (226, July) had a case in which hysteria resulting from grip affected the air passages, and finally the nerve centers for the motor functions of the larynx, causing hypokinesis, with other hemiplegic motor and sensory troubles.

Laryngeal Ictus.—Niel (126, Aug., '99) accepts the theory of *reflex cerebral inhibition* set up by irritation of the superior laryngeal nerve, and divides the cases into three classes, according to severity:

1. Sudden obscuration of intelligence, very slight—laryngeal vertigo.
2. Loss of consciousness, lasting a few seconds, the patient falling, and almost at once rising—true laryngeal ictus.
3. Sudden death following some laryngeal irritation. The latter cases are rare, but have followed a blow on the neck, cauterization of the larynx or other surgical interference. (See article by G. W. Crile, elsewhere.)

Treatment is prophylactic and has in view the neuro-arthritic diathesis usually present. Local anesthesia before surgical interference is the only resource in cases suspected of susceptibility.

P. Meyjes (19, Sept., '99) reports a case of ictus in a man of 41, who was an excessive smoker, had moderate atheroma, a red face and chronic postnasal catarrh. As the attacks were precipitated by coughing or laughing, M. considered the great irritability of the throat as an important etiologic factor.

Toxic Paralyses.—Watson Williams (2, Oct.) discusses quite fully the subject of toxic paralyses of the larynx. Excluding cortical and the purely myopathic paralyses, he divides the toxic paralyses due to inflammatory degeneration of the neuron into two pathogenic groups:

1. Infective neuritis, commonly occurring in the course of diphtheria, and less frequently observed in typhoid fever, typhus fever, scarlatina, morbilli, influenza, rheumatism, tuberculosis, and pneumonia.

2. Toxic neuritis, most frequently due to lead-poisoning, but also reported to have occurred in poisoning by arsenic, copper, antimony, phosphorus, alcohol, atropin and morphin.

The treatment is thus summed up:

(a) Appropriate general treatment of the causative infective disease; and removal of the poison in the circulation and tissues in the case of organic or metallic poisons.

(b) Electricity intralaryngeally. Strychnin in considerable doses.

(c) Intubation or tracheotomy for dyspnea and threatened asphyxia from bilateral abductor paralysis. A very complete list of literary references is appended to the article. Jobson Horne (*ibid.*) on the same subject stated that in examining the larynx in persons dead of infective diseases which are known to be complicated by toxic paralysis he had found the microscopic changes to consist of a *myositis*. These changes might pass off without permanent tissue change, as is doubtless the case usually in acute inflammations, but in very intense or persistent inflammation fibrosis may result, leaving the muscle permanently impaired. S. Lodge, Jr. (*ibid.*), described two cases of bilateral abductor paralysis in youths of 18 and 19, who were suffering from *plumbism*. Both had the blue line on the gums and other evidences of plumbism. Recovery took place in three and six months under intralaryngeal faradism and general treatment.

H. Tilley (*ibid.*) was inclined to think *any toxin*, as those of acute tonsillitis, "hospital sore throat," etc., could produce a peripheral laryngeal paralysis.

Neuralgia.—G. Avellis (13, Nov. 13) has seen a number of cases of neuralgia in healthy middle-aged persons. The symptoms came on suddenly with remissions and exacerbations on swallowing, speaking, etc. There was a typical painful spot at

the point of exit of the superior laryngeal nerve. Antineuralgics and dry heat gave prompt relief.

Paresthesia.—R. Botey (abst. 1, Oct.) writes again on this subject. He believes that the painful sensation complained of by the patient is located principally at the epiglottis and arytenoids. Cocain, locally, increases the pharyngo-laryngeal paresthesia, a characteristic which differentiates it from all local organic or inflammatory causes which can give rise to these sensations. B. therefore thinks the paresthesia is due to hyperesthesia. The condition disappears if the patient has an acute laryngitis or tonsillitis. Treatment is by tonics and the use of stimulating applications locally, particularly light touches with the galvanocautery to the epiglottis and arytenoids.

Bourneville (52, Jan. 7) reports a case of *hysterical cough* in a girl of 20. The cough set in after a disappointment and no physical cause could be detected. Suggestion greatly improved the condition.

Chorea Laryngis.—A. Onodi (5, B. X. H. I.) writes a valuable article on the question of chorea laryngis. Reviewing the cases reported under this name and the definition and application of the term as given by the most distinguished laryngologists he finds that it is applied to so many and varied conditions that it is altogether indefinite and virtually useless until its meaning shall be definitely established. Most of the cases reported have been reflex nervous cough, while almost every kind of purposeless or involuntary convulsion or disturbance of co-ordination has received the designation. Even the tracheal tug due to aneurism has been reported as chorea laryngis.

O. seems to think that the term might be entirely discarded by careful diagnosis, calling nervous cough, hysterical cough, etc., by the proper name, and in case of true choreic movements of the cords in conjunction with genuine chorea minor simply stating that chorea has invaded the muscles of the larynx, while if such choreic movements are present without chorea minor, it should be designated as choreiform movements of the cords. Nervous

cough associated with chorea minor should be designated as such.

Hysteria.—F. E. Waxham, Denver, (1, May) describes a case of *hysterical dyspnea* occurring in a girl fifteen years old who was apparently at the point of death from suffocation. The dyspnea had been present all day but grew much worse in the evening. There was cyanosis, sinking in of the walls of the chest, loud stridor and the patient limp and apparently unconscious. The symptoms were so urgent that intubation was at once attempted but the moment the tube began to enter the larynx the patient sprang up and all dyspnea disappeared at once; the tube slipped into the esophagus, from whence it was now withdrawn. The patient had seen a playmate die from laryngeal diphtheria a few weeks before.

Y. P. Gorshkoff (22, Dec. 11, '99) reports a case of laryngeal and diaphragmatic spasm in a soldier of 25 due to hysteria, in which respiration would be interrupted.

Arthritis.—Escat (abst. 2, Nov.) distinguishes acute crico-arytenoid arthritis from recurrent paralysis by the following points: (1) Dysphagia; (2) painful cough; (3) variable swelling of the arytenoid prominences; (4) acute pain on pressure behind the posterior border of the thyroid cartilage; (5) absence of ridding of the sound arytenoid on the affected cartilage, and absence of crossing of the mid-line by the healthy cord; (6) the affection being frequently bilateral, although unequal.

To distinguish from paralysis of the external laryngeal nerve the following points are given: (1) Pain in using the voice, even in speaking, in the upper registers; (2) contraction of the crico-thyroid muscle during phonation, determined by the finger in the crico-thyroid space; (3) pain on pressure over the crico-thyroid articulation.

Other symptoms observed in acute arthritis are: (1) the existence or pre-existence of acute catarrhal angina; (2) laryngeal hyperemia; (3) more or less fever; (4) extra-laryngeal poly-arthritic affections. As to treatment, electricity is valueless, revulsives cure promptly.

Vocal Nodules.—While various laryngeal lesions are described under this title, O. Chiari, (abst. 2, Sept.) in a paper on the subject, limits himself to those cases in which the nodules are round or slightly elongated and lie at the free edge of the cords, usually at the junction of the anterior with the middle third, and almost symmetrical in position. They are white in color, bordering on yellow or pink, are usually smooth, sessile and opaque, never exceeding a pin-head in size. They are thus clearly distinguished from fibromas, cysts, papillomas, and other neoplasms. They never ulcerate, and rarely disappear spontaneously.

C. found them in $\frac{1}{2}$ to 1 per cent of all larynx cases, being twice as frequent in women as in men, and are found especially among singers.

The causes seem to be chronic and acute catarrh of the larynx, vocal fatigue and perhaps defective methods of singing. The nodules are formed by hyperplasia of the epithelium and superficial fibrous layers of the vocal cord. Mucous glands are very seldom found in their formation.

H. Krause, Berlin, (2, Oct.) describes these nodules as small globular structures from pin-point to millet-seed sized and situated in the border of the purely elastic part of the cord. They are usually the result of misuse of the voice in singing, not in speaking. They are fibrous, with cystic contents and pachydermatous covering.

The hindrance to even contact of the cords and loss of elastic tissue interferes with the singing of piano and medium notes. To find a substitute for his lost register the singer increases the tension of his cords, hence exhaustion follows quickly in all singing. The tone becomes "throaty" and the voice loses its purity and beauty. The increased tension of the cords causes pachydermia. In the matter of treatment, first attempt to cause atrophy of the nodes by complete rest of the voice, failing this, surgical removal may be tried.

Capart, Brussels, (2, Oct.) takes up the question of treatment. While cures have been recorded from prolonged silence, this cannot be trusted. Rest may benefit the laryngitis which

forms the basis of the nodules, but C. has never seen it affect the nodules themselves. He condemns all such treatment as sprays, insufflations of astringents and antiseptics, painting with silver nitrate, cauterization with the latter or with chromic acid. They are ineffective and even dangerous, since they spread out, act beyond the desired limits and may cause acute inflammation. C. advises ablation or destruction with the galvano-cautery. Use only the finest and most delicate forceps, the punch instruments being too liable to seize more tissue than allowable and thus ruin the voice. Remove the node clear down to the base. The galvano-cautery is reserved for those cases with too small growths for seizure with forceps. The growths may recur, and absolute silence must be insisted on after operation, with no singing for a month. Then a complete change of method and register.

J. Garel and M. Bernard (abst. 2, Nov.) also presented a paper on this subject before the International Medical Congress at Paris. Their paper is based on the study of 144 cases. They agree with the writers already quoted as to origin and treatment. They disagree with Fränkel as to the origin of the nodule being in all cases due to a change in the glands, since in none of their cases could they find even the slightest glandular element.

A. Rosenberg (80, Dec. 18, '99) states that in vocalists suffering from this affection who do not take proper rest the circumscribed nodule seems to disappear and at the same point a broadening of the cord occurs causing a convexity of the edge of the cord. When the patient phonates there is proper approximation of the anterior half of the cords, but posteriorly there is a triangular cleft due to the convexity described.

Pachydermia Laryngis.—A. Kuttner (5 B. 9 H. 3, '99) describes a case of pachydermia observed by him, to show that B. Fränkel's explanation of the origin of the depressions in the pachydermatous swelling is not always correct. In K.'s case the much thickened cords lay distinctly one above the other, making it impossible that the depressions present could be due, as explained by Fränkel, to the pressure of the one swollen cord upon the other.

L. Rethi (5 B. 10 H. 1.) disputes Kuttner's conclusion and in the following number K. replies with a more thorough statement of his case.

J. Fein (13, Aug. 14) secured excellent results in a case of this disease by means of a 20 per cent solution of *salicylic acid in alcohol*. The immediate relief of subjective symptoms was great and several months' treatment removed the characteristic local conditions almost completely. A year later the condition remained as good as at the close of treatment.

Scleroma.—Baumgarten (2, June) reports a case of primary scleroma of the larynx in a girl of 20. Hoarseness of three years' duration, breathing difficult and noisy. The aryepiglottic folds were thickened and moved little. The laryngeal mucosa thickened, anemic, and covered with little white, dried-up blebs. There was also a nodule the size of half an almond on the left side of the cartilaginous septum. Bacilli of scleroma were found in the secretion from both nose and throat.

Baurowicz (abst. 2, Feb.) reports a case in which, besides stenosis of the larynx, there was also stenosis of the *trachea* and first *bronchi*.

Baurowicz (abst. 2, Feb.) publishes observations on two cases of "Chorditis Vocalis Inferior Hypertrophica" in which bacteriologic investigation with inoculation of the fragments extirpated from the nose showed the disease to be of the nature of *rhinoscleroma*.

Lénart (2, June) had a case of the same disease treated and cured after six months' use of O'Dwyer's tubes, but two months later there was recurrence.

Diabetic Ulceration.—W. Freudenthal, New York, (1, Feb.) reported five cases of this disease occurring in patients from 39 to 70 years of age. Two cases were classed as malignant as healing could not be secured. In a man of 70 with severe ulceration of the laryngeal aspect of the epiglottis and the interarytenoid space, healing had followed the use of an emulsion of orthoform (12 per cent) and menthol (1 to 10 per cent) in sweet almond oil, yolk of egg and distilled water. In using this the parts were

first cleansed then cocainized and then the emulsion applied by means of a syringe. The ulcerations resembled tubercular disease very much, but diabetic ulceration was the only justifiable diagnosis.

O. Leichtenstern (13, Apr. 17-24) noted that in some cases of diabetes the first symptom was a dryness of the larynx and pharynx. A case of *abscess* of the larynx is described in a woman who was suffering from diabetic furunculosis.

He calls this latter condition *furunculosis diabetica laryngis* and gives the following as its characteristics: 1. The acute onset as a circumscribed edema, rapidly proceeding to abscess-formation. 2. Recurrence of the process in various parts of the larynx. 3. Rapid cure of the abscess after evacuation. 4. Absence of fever. 5. Preservation of the perichondrium.

Erysipelas.—G. Sittmann (223, Dec. 13, '99) reports a case of secondary erysipelas of the larynx in a man of 48. The laryngeal affection developed suddenly during the course of an inflammation in an injured leg. The laryngeal symptoms abated, but edema of the lungs caused death. S. takes up a general consideration of the inflammatory conditions of the larynx resembling erysipelas.

Typhoid Involvement.—L. B. Lockard, Pasadena, Cal., (6, June 30) notes the frequency of this complication and discusses the subject in full. He quotes Landgraf's estimate, based on all known statistics, that the larynx is involved in at least 11 per cent of all fatal cases. Cold water treatment, however, greatly reduces this complication, seeming to substantiate Ziemssen's claim that the vulnerability of mucous membranes depends to a great degree on the bodily temperature. He divides the lesions into two classes, specific and non-specific, according as they are the direct effect of the typhoid poison, or due to secondary bacteria, decubitus or diphtheria.

In the specific lesion the adenoid areas alone are involved, these being found in the sinus pyriformis, at the base of the arytenoids and to a smaller extent in the ventricle of Morgagni, at

the anterior commissure, in the interarytenoid space, on the false cords and upon the lower part of the posterior epiglottic surface. The process in these structures is identical with that in Peyer's patches. The non-specific lesions are catarrh, erosions and perichondritis. The resultant scar persists through life and closely resembles syphilis. The milder ulcerations are usually not diagnosed as the general symptoms mask the local disease.

The treatment is simply local cleansing sprays or vapors. Diphtheritic laryngitis has been fatal in all reported cases save one, but anti-toxin may change this record.

Purulent perichondritis may run its course with or without necrosis of the cartilage. The cricoid is most commonly affected, then the arytenoid and last the thyroid. In case necrosis occurs death will follow unless operation is done.

Lockard closes the paper with the report of a case in a stone-cutter aged 35. The pain in the throat began the eighth day, disappearing soon, to reappear in the sixth week with some dyspnea. Examination showed an abscess of the left arytenoid. Tracheotomy was done, and the tumor incised endolaryngeally. Much contraction occurred in healing and in spite of daily dilatation no glottic opening could be maintained, the tracheal cannula being constantly needed. Finally the cords were removed piecemeal by Heryng's double curette and a permanent opening obtained, the voice being destroyed. The tracheal opening closed and the patient was able to work.

Kobler (129, No. 1) calls attention to the existence of a *characteristic affection of the epiglottis* in typhoid fever. In two cases a diagnosis of typhoid was made from the infiltration and ulceration of the epiglottis before the appearance of other typical symptoms. In a case of malaria, the plasmodium malaria being found, laryngologic examination showed a typhoid epiglottis and the subsequent course of the disease confirmed the existence of typhoid.

So long as infiltration of the epiglottis exists the typhoid process is active and only when the former disappears is the patient convalescent.

A case was presented (A) by Waggett in which tracheotomy had been done for this complication. In the discussion following, Hall and C. Beale thought the complication a very rare one in Great Britain. M. H. Fussell (159, Aug.) reports two cases of perichondritis occurring during convalescence. Severe symptoms came on suddenly in both cases. One case refused operation and died in three days. The other was tracheotomized and recovered, the tube being worn for six months. In the patient who died a large abscess of the cricoid was discovered. The same writer (7, May 26, p. 1336) says that only 7 per cent of typhoid fever cases are affected with perichondritis of the larynx.

R. W. Marsden (182, Jan.) reports four cases of laryngeal affection in typhoid, three of which required *tracheotomy*. One was, however, really a superimposed diphtheria.

C. Compaired (292, No. 15) has observed *paralysis* of the abductors and adductors and also of the left recurrent. Electrical treatment gave good results.

J. P. C. Griffith, F. A. Packard and Jopson each reported (121, pp. 376, 379, May) a case of *laryngeal stenosis* occurring during typhoid fever, and apparently due to the typhoid poison.

Larynx in Pregnancy.—L. Przedborski (5 B. 11, p. 68) has observed the following diseased conditions of the larynx accompanying and apparently due to pregnancy: One case of paralysis of both thyro-arytenoid muscles. One of paralysis of the right crico-arytenoid. One each of paralysis of the right and of the left recurrent laryngeal nerve. Four cases of laryngitis hemorrhagica. Two of ozena trachealis. One of laryngeal polyp. All of these arose during pregnancy and disappeared not long after confinement.

Laryngismus.—A. Baginsky (174, Apr., '99) maintains that laryngismus stridulus is a disease of rickety children, the rickets bearing a direct causal relation to the laryngeal disorder. In the severer cases of laryngospasm, general convulsions are likely to follow the laryngeal attack. Tetany is also likely to show itself in these cases. Enlargement of the thymus is an etiologic factor

in some cases. Phosphorus is strongly recommended in treatment, with bromides or musk for the nervous symptoms when needed.

V. Uchermann (5 B. 9, H. 3) reports a case of *expiratory spasm of the glottis* in a man. At the end of each expiration during speech there was a sound resembling "hawking," this was present only during speaking. Painting with 20 per cent cocain did not check the spasm. The author argues the case to be of cerebral origin because the symptoms only occurred during speaking, and the cocain did not relieve, showing it not to be a reflex of the mucous membrane. He concludes that it is a hyperesthesia or morbid irritability of the expiratory respiration center, depending probably on some local vascular trouble.

Ganghofer (13, No. 44, '99) in 105 cases of glottic spasm in children, found 61 with marked tetany, while of the remainder all but 7 per cent showed increased nerve irritation. He concludes that the association of glottic spasm and tetany is the rule. 96 per cent of children with laryngeal spasm are rachitic.

Glottic Edema.—G. Avellis (79, Nov. 15, '99) reports a case of laryngeal edema resulting from the use of *potass. iodid*, only three doses being taken. When the symptoms have subsided the drug may be again used, as tolerance is usually easily established.

H. L. Swain (29, Mar.) in a case of edema of the larynx, due to a *simple laryngitis*, secured prompt improvement with cocain, suprarenal extract and scarification.

Bacaloglu (abst. 139, July) relates two cases of *sudden death* in the course of laryngeal disease. In the one, a man of 38, death occurred from edema of the base of the tongue and entrance to the larynx in the course of a large *peritonsillar abscess*. The second was a *syphilitic patient*. There was a general glandular enlargement, and there was some dysphagia and dyspnea for some days. Sudden death occurred and autopsy showed swelling and redness of the epiglottis with a deep ulceration, also deep ulcerations on and beneath the vocal cords.

Laryngitis.—In catarrhal laryngitis Joseph Holt (68, Sept.

16. '99) recommends chloral, 5.0; Kalii brom., 3.0; ammon. brom., 2.0; aq. cinnam., 62.0. A teaspoonful repeated every 20 minutes until improvement occurs (for a child of five years).

Sevestre and Ausset (82, Apr. 21) in laryngitis arising in cases of measles, prefer *intubation* to tracheotomy when surgical interference is demanded, but if after three or four days symptoms return on withdrawing the tube, tracheotomy must be done.

Schroetter (68, Jan. 20) recommends the following powder in *chronic laryngitis*: Alum, pulv., 5.0; sacch. alb., 5.0; morp. mur., 0.5.

Membranous Laryngitis.—V. E. Lawrence, Ottawa, Kas., (104, Sept.) maintains that membranous croup is a disease distinct from laryngeal diphtheria and amenable to treatment not at all appropriate to the latter. L. claims to have treated twenty-five or thirty cases of membranous croup in the past seven years without a death, the remedy used being the dark iodide of lime. This is an unstable preparation, very different from the ordinary iodide of calcium, which latter is of a lighter yellow color and quite stable.

L. puts 10 to 15 grains of the drug into 4 ounces of water and gives 1 to 2 teaspoonfuls every 30 minutes till improvement occurs, then less frequently. The drug is not poisonous in these doses.

W. J. Bell (178, Feb.) thinks that in membranous croup the *streptococcus* is the pathogenic factor, while in diphtheritic croup the K-L. bacillus is the offender. In fourteen intubations B. had ten recoveries—71 per cent.

Symes (258, July) maintains that croup is *not a true disease*, croupy symptoms being produced by a variety of different diseases. Severe croupy symptoms are most usually due to diphtheria or laryngitis stridulosa, while most of the deaths registered as due to croup are from diphtheria.

In a paper (6, Dec. 30, '99) H. B. Sheffield, New York, emphasized the frequency with which membranous croup is met *without the presence of diphtheria bacilli* and later (17, Mar. 31) he reports a case in a child $2\frac{1}{2}$ years old, in which intubation

was required and in which careful examination of the expectorated membrane failed to show any K-L. bacilli. The child had spasmodic croup a year previously which had left a croupy cough lasting until the present attack. The tonsils and throat and the submaxillary glands showed no disease. Laryngeal stenosis followed requiring reintubation several times during a period of eighteen days.

J. O. Symes (298, V. 18, No. 67) reports eight cases of laryngeal stenosis in which the *K-L. bacillus* was not present, although there were various micro-organisms, chiefly streptococci and staphylococci. Antitoxin was used and tracheotomy done in most of the cases. Four died. He believes this form of croup to be much more sudden in onset than diphtheria and the fever rises quicker and higher. The membrane is soft and less firmly adherent and does not cause bleeding when detached. He concludes that non-bacillary croup is not a rare disease and has a high mortality rate.

Syphilis.—Jordon, Moscow, (abst. 139, Oct.) finds papillae in the pharynx in about one-third of all cases of syphilis, in the larynx in about one-thirtieth. Tertiary syphilitic lesions are found in the pharynx in about one-thirteenth of all cases, in the larynx in one-tenth.

Injuries.—J. E. Platt (95, Feb.) reports a case of *fracture of the hyoid bone* in a man of 58 in whom tracheotomy was followed by fatal broncho-pneumonia, death occurring after three days. The thyroid cartilage was found to have a considerable vertical fracture. He finds that fracture of the hyoid bone has been fatal in about 50 per cent of recorded cases, while fracture of the laryngeal cartilages is fatal in 70 to 80 per cent. According to statistics, fracture of the cricoid cartilage, whether alone or accompanied by other laryngeal injuries, is invariably fatal. As slight fractures are likely to be unrecognized the prognosis is probably not so grave as statistics seem to show. The practical point which Platt derives from his study is the necessity of performing tracheotomy at once in cases of fracture of the larynx, as

dyspnea may set in suddenly in any case and operative interference come too late to save the patient.

Boulai (2, Feb., p. 93) relates the case of a boy of 15 in whom *direct fracture* of the larynx occurred from a fall. Dyspnea developed from stenosis in the course of six weeks, necessitating tracheotomy and the use of Schrötter's dilating tubes, excellent results being attained.

S. Saitta (63, July, '99) reports a case in a woman of 67 who fell on an axe and fractured the thyroid cartilage. After a few days laryngeal stenosis began and although the case was correctly diagnosed by the laryngoscope, tracheotomy was refused and the patient died of asphyxia.

Dittrich, Prague, (246, No. 45, '99) thinks he has demonstrated by researches on dead bodies that it is *impossible to recognize fracture* of a horn of the thyroid cartilage during life.

E. Mayer, New York, (7, Oct. 27) describes a case of unusual injury to the larynx—*comminution of the thyroid cartilages* due to a bullet whose point of entrance was in the frontal bone, from whence it passed through the superior maxilla, the soft palate, struck the hyoid bone, thence deflected through the thyroid cartilages into the esophagus, dropping to the stomach and being finally passed by the bowels. Tracheotomy was necessary on account of apnea. Long-continued intubation with a new and original device enabled the patient to breathe with the tracheotomy tube closed for several hours.

Cut Throat.—In a case of cut throat in which the wound involved the thyroid cartilage and the crico-thyroid membrane, Morestin (215, No. 15) sutured the larynx, the musculo-aponeurotic layer, and the skin, in separate layers, getting healing in eight days and a soft, pliable scar without adhesions.

Obstruction.—C. H. McIlraith (8, Apr. 28) reports a case of *congenital laryngeal obstruction* in a female baby six months old suffering from congenital syphilis. Stridor commenced at six weeks and was inspiratory, expiration being noiseless. During quiet or sleep the breathing was easy. Laryngoscopic examina-

tion showed the ary-epiglottic folds as thin bands closely approximating each other. Death occurred at six months apparently of laryngeal spasm. Autopsy showed the same condition revealed by the laryngoscope, the mucous membrane over the arytenoids being lax and acting as a valve.

Kraus, Paris, (293, No. 9) observed a case of *congenital diaphragm* of the larynx in a man of 21. The true cords were grown together in the anterior two-thirds. Loss of voice was the chief complaint. K. determined the thickness of the membrane by transillumination from the exterior of the larynx. Removal was with cautery and curette. The condition was not a simple epithelial hyperplasia or membrane formation, but was an abnormal fetal development and persistence of tissue masses in the larynx.

J. A. Kenefick, New York, (1, Feb.) exhibited (C.) a colored male child two and one-half yearsold who had been *intubated thirty times* within six months. The first intubation was for laryngeal diphtheria, and subsequent intubations were for recurring dyspnea. The longest period the tube had remained out was fourteen days.

L. Fischer (68, Dec. 2, '99) asserts that the recurrence of laryngeal stenosis after intubation is primarily caused by forcibly pushing a tube into an edematous or infiltrated mucous membrane. This agrees with O'Dwyer's opinion on the same point. To prevent this condition every tube must be inserted in the gentlest manner possible. Remove the tube every three to five days. If a tube must be inserted more than twice Fischer uses a plan suggested by O'Dwyer. Use a rubber tube which has been immersed in a solution of hot gelatin containing five to ten per cent of powdered alum. He has also had good results from a ten per cent ichthyol and gelatin solution used in the same manner.

M. Boulay and J. Boulay (abst. 1, Oct.) cured a case of *laryngeal stricture* in a young man of 19 who had worn a tracheal cannula for sixteen years. The method used was intra-laryngeal electrolysis carried out for several months. Rapid and slow dilatation, cauterizations, and cutting forceps had previously been used without effect.

A. Rundstrom, Stockholm, (*Hygiea*, 1899,) in an elaborate statistical article on the treatment of stenosis of the larynx and upper trachea, concludes as follows: 1. In those cases of stenosis in which not only is the lumen of the larynx greatly contracted but the entire organ deformed through necrosis of the cartilages, resection should be done. 2. In cases due to previous tracheotomy in which the lumen is too small to admit of a tube large enough for respiration, use first the Schrötter bougies and later intubation. 3. In all other cases do intubation. 4. Assist and shorten the mechanical treatment by means of appropriate endolaryngeal operation (incision, scarification, etc.).

S. von Stein and Kasparianz (241, No. 32, '99) report a case of severe stenosis of the larynx and upper trachea following small-pox in which *laryngo-tracheo-fissure* and removal of the scar tissue was done. Dilation was practiced for four months after with excellent results.

Sargnon (271, Aug., Sept., '99) concludes an article on intubation and tracheotomy in non-diphtheritic stenosis, with the statement that intubation is best in curable and dilatable stenoses of the larynx and upper trachea, while tracheotomy is indicated in incurable and deep-lying stenosis.

T. C. Evans (142, Dec., '99) believes intubation to be the proper treatment in syphilitic stenosis of the larynx with dyspnea.

J. Jankelevitch (19, No. 1) reports a case of severe dyspnea from an unusual cause. The patient was a girl of 18 years in whom *relaxation of the glosso-epiglottic ligament* allowed the epiglottis to be aspirated forcibly into the larynx at every inspiration and as strongly against the base of the tongue at each expiration. The remainder of the upper respiratory passages were normal. J. considered the relaxation due to anemia and gave treatment accordingly, at the same time cauterizing the ligament at its glottic attachment repeatedly with satisfactory results.

Intubation.—C. J. Whalan, Chicago, (7, June 2) considers this subject in a well-written article. He urges that the general practitioner fit himself to perform the operation and not allow himself to depend on the specialist. He also speaks for earlier

intubation in cases requiring it, not waiting for cyanosis to appear.

An illustration is given of an intubator and extractor combined which he has found very satisfactory in more than 1,500 cadaver operations. It is modeled after the French instrument.

Northrup reports (17, May 17, p. 1000) a case of *atresia of the larynx* due to faulty intubation. The tube had been pulled out by the child several times and the larynx had been wounded so that finally dyspnea required tracheotomy. The lacerated surfaces then grew together. An operation for the relief of this condition was unsuccessful and death occurred some time later. The faulty intubation was considered due to an inexperienced operator.

W. E. Lower (111, Jan.) presents the argument for early intubation in laryngeal diphtheria, the advantages being the greater strength of the patient, the shorter period for wearing the tube, the other advantages depending on these two points. Rectal feeding is recommended.

W. B. Pusey (110, Nov. 15, '99) had 48.5 per cent of recoveries in 276 intubations. Pushing the membrane down before the tube was the most common accident, but was without serious results, save in one case.

J. Rogers, Jr., (103, May) finds that the commonest cause of *post-diphtheritic stenosis* necessitating long-continued intubation, is a hypertrophy of the subglottic tissues by a chronic inflammation for which intubation is in nowise responsible, as it occurs irrespective of operation. In stenosis, caused by ulceration, the tube is also rarely at fault.

A. Lorgnon (Thèse de Lyon, '99, abst. 2, June) devotes a work of 650 pages with 47 figures to a consideration of the subject of intubation and tracheotomy apart from croup in the child and in the adult. A résumé and critical analysis is given of the cases known. His general conclusions are that intubation is indicated in stenoses accessible to treatment through the larynx and upper part of the trachea, while tracheotomy is reserved for stenoses not thus accessible.

Trumpp (13, No. 45, '99) and Escat (82, July 2, '99) in

articles on intubation in private practice speak for the latter in opposition to tracheotomy in ordinary cases. Intubation is not yet so popular abroad as in America. T. C. Evans (142, Dec., '99) presents the advantages of intubation in the treatment of syphilitic stenosis of the larynx. The hard rubber tube is recommended. In all cases requiring long-wearing of the tube the metal tube is inappropriate. A. P. Heineck (87, June, Aug., Sept.) gives a very good presentation of the subject of intubation and tracheotomy.

TUBERCULOSIS OF THE LARYNX.

Diagnosis.—Lennox Browne (2, May) discussed the subject "The Conditions of the Throat and Larynx simulating and predisposing to Tuberculosis" before the British Laryngological, Rhinological and Otological Association, and gave the history of some very instructive cases. He especially dwelt on the association of syphilitic and catarrhal lesions of the throat and larynx with lung signs very suggestive of tuberculosis in which relief of the throat disease was followed by subsidence of the lung symptoms. He could refer to a good many cases in which snipping off the end of a relaxed uvula or the destruction of lingual tonsils or varicosities brought relief from conditions which had been pronounced tuberculous by competent diagnosticians. In some cases the tubercle bacillus had been found present, and in many cases no doubt the system would have yielded to tuberculous infection had not the removal of local irritation enabled it to more successfully resist the bacterial invasion.

Monsarrat (11, No. 43, '99, abst. 4, No. 1) finds that in some patients before tuberculosis is readily recognizable there is present a beginning laryngitis attended by varying symptoms. When the chest signs are very slight and yet the cough is persistent, violent and paroxysmal, the larynx should be carefully watched. A little dry cough, coming by fits and starts when the patient begins to speak, is also a suspicious symptom.

In some cases speech is affected, and yet without cough, dysphonia appears, while the laryngeal involvement is insufficient to explain the alteration in the voice. A rough eunuchoid voice without corresponding laryngeal conditions points to tuberculosis.

Monochorditis is another form of incipient consumption. A patient becomes suddenly aphonic and presents one cord red and swollen, the other being almost normal. The affected cord usually corresponds to the side of the infected lung.

Laryngeal tuberculosis may originate as a nodule on the free margin of the cord, the nodule being more rounded and less conical than singers' nodes.

Another special form of laryngeal tuberculosis begins with the sensation of a lump in the throat, no laryngeal lesion being visible and the patient in good general health. This form occurs particularly in women.

E. Schmiegelow (245, Nov. 1, '99) gives a case to show the difficulty in making a diagnosis of laryngeal tuberculosis at times. A man of 60, complaining of hoarseness and dysphagia, was found to have an ulcerative infiltration of the left side of larynx. The changes resembled those of tuberculosis, but an excised piece showed no tubercle bacilli. A diagnosis of adenocarcinoma was made and a thyrotomy with removal of the diseased parts was done. The tissue removed was found to be tuberculous and the patient died in seven weeks of an acute miliary tuberculosis.

W. L. Ballenger (109, April) emphasizes the ashen grey color of the laryngeal and lower pharyngeal mucosa as a means for the early diagnosis of tuberculosis, and refers to cases in which skilled diagnosticians were not sure of the diagnosis after bacteriologic and physical examination, in which the diagnosis was readily made from the appearance of the laryngeal mucosa. In the treatment the author insisted that if the curettement of the infiltrated arytenoid cartilages was attempted it should be thoroughly done, as the masses were surrounded with an investment capsule which was richly supplied with lymphatic spaces that would pick up the fragments of tubercular tissue and carry the

infection to other parts. The application of lactic acid after curettement in a measure destroys the fragments of tubercular tissue and thus tends to prevent the spread of the pathologic process.

Prognosis.—V. Cozzolino (19, No. 5) takes a very hopeful view of the curability of laryngeal tuberculosis under the same conditions as the pulmonary disease, that is, in the early stage. Therefore, early thorough laryngeal examination should be made where the symptoms are at all suggestive. In doubtful cases give the patient, not the disease, the benefit of the doubt. Nasal respiration should be made perfect. Climatic treatment is just as helpful as in the lung disease, and mountain sanatoria are the best places for patients, rich or poor.

Eisenbarth (223, Sept. 29, '99) reports a case of spontaneous cure of tuberculous ulcer of the larynx. The patient, a man of 47, had pulmonary and intestinal tuberculosis and at one period an ulcer appeared in the larynx. He received no treatment for the larynx, but the symptoms disappeared gradually, except hoarseness. Autopsy revealed a healed ulcer.

Royet (abst. 139, Sept.) healed a case of tubercular ulceration in a patient who had had pulmonary tuberculosis for five years. R. used locally sulforicinphenol and curettage.

T. P. Berens (1, Jan., p. 32) exhibited before the New York Academy of Medicine a patient, male, 32 years old, in whom unmistakable laryngeal tuberculosis accompanying tuberculosis of both lung apices had fully healed under treatment. The edematous tissues of the larynx were injected once a week for four weeks with creosote and injections into the larynx of iodoform and ether (1 drachm to 1 ounce) were made daily. Healing took place in three months. One year later a small ulcer in the interarytenoid space was healed by application of mono-orthochlorphenol and the use of the iodoform and ether. Healing seemed to have occurred in the lungs also. Quinlan, Freudenthal and Myles each reported similar cases in the discussion. Myles emphasized the necessity for early amputation of the epiglottis in cases of early diagnosis of tuberculosis of this part.

Primary Tuberculosis.—M. A. Goldstein (1, July) reports a case of this rare laryngeal condition. The patient was a man of 37, an inveterate smoker, using twenty to twenty-five cigars daily. All who examined the case agreed that the appearance was typical of tuberculosis. The disease had existed four years. No lung involvement had been found until within a month when a very slight change had been detected. In a later report on this case G. gives the results of autopsy, which confirmed the diagnosis above given.

S. Bernheim (abst. 1, Oct.) read a paper on this subject before the International Medical Congress at Paris. He claims to have seen twenty-nine cases and believes the larynx is more often than is thought, the primary seat of tuberculosis. He includes lupus as a variety of laryngeal tuberculosis of slow evolution. He believes tubercular laryngitis to be often cured, his chief therapeusis, aside from mild local antiseptics, is the hygieno-dietetic treatment.

Champeaux (11, No. 14) describes what he believes to be a primary laryngeal tubercular tumor occupying the ventricular band. There was slight apical dullness, but no bacilli.

R. McKinney (244, Aug., '99) reports two cases of primary laryngeal tuberculosis.

S. G. Dabney (110, Jan. 1) does not think tuberculosis of the larynx before any manifest involvement of the lungs is very rare. The diagnosis may often be made from the local appearances. The prognosis is a little more hopeful than formerly. In treating, first cleanse well with an alkaline spray and in case of ulceration follow by insufflation of orthoform and iodoform or nosophen. If the ulcer is accessible apply lactic acid, if there be no contra-indications.

Treatment.—Heller (223, Dec. 13, '99) considers the first essential in the treatment of tuberculous ulceration of the larynx to be cleanliness. The best method for accomplishing this is by the use of lavage with warm solutions of sodium chloride thrown upon the glottis or into the larynx by means of a small tube that is best passed through the nose. H. does not believe in forced

inspiration when there is purulent softened lung-tissue, as this may be inhaled still further into the lungs.

Lennox Browne's (2, May) conclusions as to treatment in this disease are:

1. To clear away any obstruction to free nasal respiration.
2. To remove all sources of irritation in the palate and fauces.
3. To reduce inflammation and its products in the larynx and lower air passages by the use of intralaryngeal and intratracheal injections made under pressure. Of these he prefers guaiacol and almond oil equal parts.
4. The drugs employed to improve general health are, mainly: Carbonate of guaiacol when assimilation is defective, and ferro-manganese, with or without arsenic, nux vomica, etc., for improving the blood quality.

While having great confidence in the benefit of the open-air treatment of tubercular disease, he very much regrets to see this depended on so often to the exclusion of drugs when there has been so great progress in the therapeutics of the disease in recent years.

V. Schmithuisen, Aix-la-Chapelle, (2, April) finding the curette inefficient, has, since 1890, used the *galvano-cautery*. He finds the larynx much more tolerant than generally supposed, inflammatory swelling never appearing, except slightly when the cautery was applied to the posterior wall near the arytenoids. The cautery was applied six to ten times at a sitting, if necessary, and heated to a high degree. Pure lactic acid was applied immediately after cauterization, or in the case of large infiltrations, chromic acid was used on the slough and neighboring parts. The burn must be carried through to healthy tissue. Three or four weeks should elapse before the cautery is reapplied to the same place. Lactic acid may be applied between times. Twenty severe cases were treated in this way and cured.

L. Vacher (abst. 1, Oct.) in the ulcerative period, removes the vegetating parts by *curetting or cauterization* and applies

soothing applications. V. uses intratracheal injections, having, after a great amount of experimentation, selected the following formula: Iodoform, ether to saturation, 100; guaiacol, 5; eucalyptol, 2; menthol, 1. This is injected after using cocain, the amount being increased up to 2 cc. The injections are generally well borne.

Bommier (abst. 7, Sept. 29) finds laryngeal symptoms in one-third of all cases of pulmonary tuberculosis. Sulphur baths and the sea shore are bad for the former, spraying is ineffectual and often distressing. Operative treatment is not of sufficient benefit to outweigh its discomforts. Absolute rest for the throat, general measures and inhalations are recommended. The patient is taught to insufflate di-iodoform, and this is used instead of lactic acid.

T. P. Cheesborough (46, Aug.) recommends watching the general health of the patient, food tonics, digestants according to needs. *Creosote* is recommended as of value in every case, given in increasing doses to toleration. Alkaline washes for nose and throat, and in some cases the curette, followed by lactic acid, 3 per cent, gradually increasing the per cent of acid.

Fasano (254, June 10, 32, Aug.) claims remarkable results from thiocol in this disease. In eleven secondary and three primary cases the ulcers healed in less than a month. The following was used by insufflation: Thiocol, .1; cocain mur., .4; acid boric, 1; and small doses of thiocol were given internally.

Schmiegelow (abst. 1, June) is favorable to lactic acid, excision and galvano-cauterization.

W. Freudenthal (5 B. 11 H. 1.) considers the treatment by lactic acid as "antiquated and barbarous and should be completely abandoned." His treatment is as follows: 1. Suprarenal extract. 2. Apply menthol-orthoform emulsion, thus causing long-continued anesthesia and consequent curative effects. 3. The use of olive, almond, or sesame oil to lessen dysphagia in many cases. 4. Phototherapy. 5. Heroin for cough.

Lacroix (abst. 139, Oct.) recommends the vapor from a

mixture of menthol, bromoform, and formol. The mixture is heated and an air current passed through it.

Kassel (19, June, '99) thinks the curette contra-indicated when the lung condition is bad. He uses 10 per cent menthol in alcohol as an inhalation. He uses nirvanin, 10 per cent, in water, followed by orthoform powder and then uses lactic acid.

G. Ferreri, Rome, (126, Vol. 26, No. 1) advocates the abandonment of topical treatment with lactic acid and the like and the return to the old treatment by applications of ethereal solutions of iodoform, first scraping away thickened tissues with a pocket-shaped scoop. The pocket catches the fragments.

P. S. Donnelan (189, Nov., '99) favors the intravenous injection of a 1 to 5 per cent solution of sodium cinnamate in water every third or fourth day. Lactic acid locally is preferred and curettement is opposed.

Logan Turner (2, July) exhibited the larynx (A) of a man of 34 who died from sudden edema of the glottis consecutive to pulmonary and laryngeal tuberculosis. Such cases are very uncommon.

E. F. Ingals (7, Feb. 10) does not think *climate* has the same significance in laryngeal tuberculosis as in the pulmonary disease. He prefers a warm, dry climate at a moderate elevation. W. E. Casselberry (ibid.) prefers the Rocky Mountain district and thinks the air better in Colorado than Arizona. He has never seen but two healed cases of laryngeal tuberculosis. E. Klebs thinks any *climate* suitable for the lung disease is suitable for the throat, the chief thing is the change in the manner of living, and being much in the open air.

Lupus.—H. Wiggend (5 B. X. H. 1) in an examination of 200 patients having lupus of the skin, found 10 per cent with a lesion of the larynx or characteristic scars showing former involvement. Fifteen of the laryngeal cases were females, five males. In forty cases of laryngeal lupus, pain and difficult deglutition were exceptional, and not severe even when present. Hoarseness was present in seven, aphonia in four cases, this rare involvement of the voice being due to the fact that the disease

affects the upper part of the larynx chiefly. Expectoration was absent in most of the cases. As there is a spontaneous tendency to cure, W. is inclined to omit local treatment and attend to the general condition and the skin affection, only resorting to caustics (lactic acid, 25 to 100 per cent; argent. nit., 4 to 20 per cent; electro-cautery, etc.,) when the disease, by advancing toward the glottis, threatens stenosis.

Even when the subglottic region is involved the stenosis is rarely so great as to require tracheotomy.

H. Mygind (5, B. X. p. 131) gives observations on twenty cases. He distinguishes five stages: 1. The subepithelial nodular and diffuse infiltrated mucous membrane. 2. The stage of proliferation of the lupus nodules over the surface of the mucous membrane. 3. Ulceration of the nodules. 4. Ulceration of the cartilage. 5. Scar formation.

Syphilis of the Upper Air Tract.—G. L. Richards (7, Nov. 24) discusses this subject and describes a number of instructive cases. A very general discussion followed (Sec. Laryngol. and Otol. Am. Med. Assoc.), in which many more puzzling cases were reported, showing the difficulties often attending the diagnosis of syphilis in this locality.

Foreign Bodies.—G. W. Crile (70, Jan. 27; Feb. 24) gives the results of his *experiments on dogs* with regard to the effects of foreign bodies in the pharynx, esophagus, larynx and trachea. The respiration and circulation were not notably disturbed by foreign bodies in the esophagus unless they lay opposite the larynx and especially its upper part.

A foreign body lodged in the trachea can produce only coughing unless the swelling becomes great enough to occlude and cause asphyxia. A foreign body in the larynx, on the other hand, produces severe reflex phenomena, even to the extent of collapse. In operating for removal from the larynx or trachea the operation is preferably done under local anesthesia, and when the larynx is reached it is especially important to cocaineize its interior to prevent the reflex inhibition which may cause collapse and death when the sensitive area of the larynx is touched.

W. Downie (8, Oct. 14, '99) extracted a "three-penny bit" from the larynx of a man aged 46, using cocaine and forceps. The foreign body had been swallowed while the man was intoxicated and remained in position a month before discovered, the symptoms, aphonia, dyspnea and pain, being attributed by the patient to a cold. Healing occurred readily with cicatrization. D. quotes Bosworth's statistics of 1,674 cases of foreign bodies in the air-passages, in which 28.6 per cent of the non-operated patients died, while 25 per cent died after operation.

The death of a child two and three-quarters years old is reported (17, Feb. 10) from a *spray tip* becoming lodged in the larynx. The accident occurred while the mother was spraying the child's throat. The tip became loosened and fell, with the result as stated.

Tsakyroglous (abst. 42, May 25) reports a case of *leech* in the larynx in a man of 45, the symptoms being blood spitting and dyspnea. The patient thought he swallowed the leech while drinking from a spring. T. has previously reported two such cases.

B. Hamilton (9, July 7) reports a case of impaction of a *bean* in the larynx in a boy of 12. After twenty-four hours a hasty tracheotomy was done on account of sudden asphyxia and the bean was expelled through the opening. Recovery.

A. W. de Roaldes, New Orleans, (6, Oct. 6) removed a *pin* from the larynx of a young girl, which had remained there two years. The removal was by endolaryngeal method.

TUMORS OF LARYNX.

F. Semon (126, Mar., '99) reports three cases seen within seven years in which *blood clots* in the larynx *simulated actual neoplasm* so closely that an erroneous diagnosis resulted. In one case thyrotomy was done, revealing only the blood clot and tumefaction from interstitial hemorrhage. In another, after three months' observation, the tumor was dislodged by a fit of cough-

ing, after use of the laryngeal brush. The cases were all very singular in that the blood clot retained position and appearance during such extended periods of observation.

Polypi.—S. Monselles (19, No. 5) removed a fibrous polyp the size of a pea from the everted ventricle of a man aged 33. The eversion of the ventricle seemed to have resulted from a violent fit of sneezing. The ventricle was excised with forceps after failure to replace it.

Gaudier (263, Nov. 1, '99) finds laryngeal polypi *not infrequent* in his practice.

Cysts.—E. Louys (225, Dec. 10, '99) finds that in 693 polypoid new growths of the larynx 6 per cent were cysts. The etiology and pathology are quite fully discussed (long abst. 17, Apr. 21). He describes a case in a girl of 19, in which with the laryngoscope the growth seemed malignant. Thyrotomy was done after preliminary tracheotomy and the cyst removed by the hot snare. It was thought to be a remnant of the thyroglossal duct, the remains of this duct being dissected out after removal of the cyst.

J. P. Clark, Boston, (119, Nov. 29) had a case of cyst of the right vocal cord which was so hard as to suggest fibroma. The forceps slipped from its surface and a laryngeal knife was necessary for its removal.

Papilloma.—E. T. Dickerman (7, Oct. 27) describes five cases *in children*, with the treatment and results. Rosenberg in 1897 collected and published 231 cases, to which D. adds his own and sixteen other cases which he had found recorded, making a total of 252.

Dickerman concludes as follows:

1. Papilloma of the larynx is, especially in this country, a rare disease.
2. In a number of cases they undergo spontaneous cure.
3. Intralaryngeal methods should always be tried first, unless dyspnea is pronounced, when tracheotomy should be done at once.
4. After tracheotomy, intralaryngeal methods should be tried.
5. Patient should wear a tube for six months after the

growth has disappeared. 6. Thyrotomy should be considered only as a last resort.

D. found a 5 per cent salicylic acid solution in alcohol a valuable application.

In discussing this subject, Laryng. Sec. Am. Med. Assoc., (7, Oct. 27) the several members who spoke mentioned the obstinacy of these growths in children and the little often accomplished by removal either intralaryngeally or by thyrotomy. Absolute alcohol is still on trial with much evidence in its favor.

J. N. Mackenzie found the best topical application to be *sulphate of zinc*, two or three grains to the ounce. M. also uses this solution to shrivel up the remnants of adenoids and the remnants of laryngeal growths after operation.

Luc (11, No. 22) made a *diagnosis* of laryngeal papilloma in a girl of three years from the fact that there was no fever nor general disturbances and that the trouble had progressively increased during two months. Laryngoscopic examination was impossible. Thyrotomy was done after preliminary tracheotomy and numerous papillomata were scraped from the cords. Healing readily occurred, but recurrence is expected.

Boulay (239, abst. 4, No. 4) advises attempt at removal by the mouth in these cases; failing in this, if symptoms be not too urgent, wait till child is old enough to operate through the mouth. If the dyspnea be too great, tracheotomize and leave the canula in place; if no improvement occurs, perform thyrotomy and remove the growths.

J. S. Gibb (7, Oct. 27) reports a very interesting case of this growth in a man of 52. The growth was of *pearly white character*, located on the sides of the larynx down to but not including the true cords. Later, however, the cords became also involved and the glottis almost completely occluded. Iodids were of no value and no treatment seemed to do more than give temporary relief. Three years after coming under observation tracheotomy became necessary, but septic infection at once occurred, with a fatal issue. Gibb is inclined to attribute the sepsis to the pre-

vious intralaryngeal operations. The later condition of the growth seemed to be merging into malignancy.

In the discussion following (7, Oct. 27) in the Laryngological Sec. of the Am. Med. Assoc., Ingals and Joachim reported similar cases. J. Wright described a case in which a white growth appeared on the soft palate in a man of 72, the tonsil being also involved. Microscopic examination of a piece seemed to show undoubted carcinoma, the history showing a growth of several years. Later the tumor was snared off and perfect recovery ensued, W. expressing the opinion that the tissue was simply hyperplastic. N. H. Pierce alluded to the similar appearance of these white papillomas and some carcinomas of the larynx, and suggested as a *means of diagnosis* the use of peroxide of hydrogen. The whitish appearance of the carcinoma is due to a secretion and is readily dissolved by the peroxide, thus leaving a red, uneven surface, while the papilloma would remain unchanged.

P. de Champeaux (11, Apr. 7) reports the case of a military officer who had cough, hemoptysis and other lung symptoms, which had led to a diagnosis of incipient tuberculosis. A papilloma was discovered and removed, with complete relief of the symptoms.

R. Abbe (68, Apr. 28) describes a case of laryngeal papilloma in a child in which *four laryngotomies* were done, recurrence taking place each time in spite of thorough removal and cauterization with the actual cautery, monochloroacetic acid and carbolic acid. After the last operation the tracheotomy tube was allowed to remain in position six years and then removed, with no recurrence of the growths a year later.

Bronner (A. 2, Feb.) presented a case of *recurring papillomata* of the larynx in a man of 49, in whom a formalin spray used for three months had caused almost complete disappearance. He began with a strength of 1 in 2,000, gradually increasing till 1 in 250 was reached. Other treatment, including salicylic acid, had been ineffectual.

W. K. Simpson, New York, (1, Mar.) gives the history of a case of *recurring papilloma* in a man 44 years old, which presents

some interesting features. The tumor, a very small one of the cord, was cleanly removed, and decided to be a papilloma. Three and a half months later a recurring growth was removed and pronounced epithelioma. One month later another recurrence was cleanly cut away and the wound deeply cauterized with the galvano-cautery. Two years later no further recurrence had taken place. The last growth removed was pronounced papilloma.

F. J. Quinlan, New York, (1, Apr.) reports a case of papilloma of cord in a woman of 45. Growth had a peculiar waxy appearance.

S. S. Bishop (7, June 16) had a case of papilloma in a man of 50 in which the larynx was so low that he could only reach a portion of the growth with the longest Mackenzie forceps he could find. He had a special pair of biting forceps made, three-quarters of an inch longer than ordinary, with which the operation was successfully completed.

J. Ewing (68, Feb. 17) records an unusual case of papilloma in a woman of 40, in which *death occurred from suffocation*. Ten days before death the patient seemed in good health. Dyspnea began and finally the patient was brought to the hospital. Laryngoscopic examination not satisfactory. The patient died a few hours after entering the hospital. Autopsy showed a papilloma of the subglottic mucous membrane, which was necrotic, and nearly completely filled the lower part of the larynx. The upper larynx was catarrhally inflamed, while that immediately touching the tumor was necrotic.

Cartilaginous Tumors.—A. Alexander (5, B. X. H. 2) has been able to collect a list of thirty cases that have been published and adds two of his own. He reviews all the cases carefully and makes the following classification: (1) Enchondromata, originating from non-cartilaginous matrix. (2) Chondromata, consisting of and existing in permanent cartilage. (3) Mixed growths. (4) Inflammatory neoplasms. (5) Hypertrophies. The histology, etiology, symptomatology, diagnosis and treatment are fully considered.

Angioma.—S. Trask, San Francisco, (1, Feb.) reports a case of angioma in a healthy man of 28 years. The attachment was by a broad base between the arytenoids. The voice was not affected. T. considers the cause in such a case to be a tendency to varicosity and a wrong use of the voice during congestion.

Vincenzo (211, Feb. 28) reports a case of *flat condyloma* of the vocal cords, and discusses this manifestation of the second stage of syphilis.

Fibroma.—A. B. Thrasher, Cincinnati, (6, Oct. 6) reports a case of fibroma in a woman of 56, the patient complaining of hoarseness and dyspnea. A preliminary tracheotomy was done, the larynx split, and the fibrous tissue removed. The patient made a good recovery, with hoarse but audible voice. There was very extensive connective tissue deposit.

Lenzman (13, No. 15) removed an *ecchondroma* from the broad surface of the cricoid by thyrotomy. Tracheotomy had previously been done.

Amyloid.—P. Manasse (289, B. 159, H. 1) gives a very full report and discussion of the subject of amyloid tumors of the upper air passages. In the first case the larynx and trachea bore a number of the tumors from pin-head to pecan sized. The growths were only discovered post-mortem. In the other, a man of 50, the patient complained of dyspnea and difficult swallowing. There was a gray-red tumor like a second uvula attached to the left side of the palate. There were several small sago-like growths on both tonsils, and a large tumor of the larynx attached to the ary-epiglottic ligament. These tumors showed an undoubted sarcomatous nature, with amyloid degeneration.

Cancer, Diagnosis.—In the diagnosis of cancer of the larynx, B. Fraenkel (2, Sept.) maintains that the *microscopic examination* is of fundamental importance. Negative results do not permit of certain conclusions, but positive results make the diagnosis exact and indicate the treatment. Globular collections of epithelial cells, while suspicious, are not enough; epithelial

cell nests must be found where they do not belong. The irregular structure of the epithelium such as is found in typical epithelial nests, is the characteristic feature of cancer. Discussing the same subject (2, Sept.), M. Schmidt arrives at the following conclusions:

1. Cancer which arises in the depths of the tissues of the larynx sometimes gives origin to a true papillomatous proliferation on the surface of the mucosa, and closely resembles perichondritis throughout its entire course.
2. Cancer of the ventricle of Morgani, seen by the laryngoscope, often appears like internal perichondritis.
3. Rarely, cancer commences behind, and almost beneath, the cricoid cartilage, only betraying itself by paralysis of the recurrent nerve.
4. Syphilis is excluded by three grams daily of KI for two weeks.
5. Only a positive result by the microscope is decisive.

D. B. Delavan (68, Mar. 17) in diagnosis lays stress on three points: 1. Continuing hoarseness without other known cause. 2. Sharp, sudden pain. 3. Loss of movement on the affected side.

Treatment.—In a discussion of this subject before the American Laryngological Association, John N. Mackenzie (6, Sept. 8) held that the clinical examination of a growth in the larynx by laryngoscopy, supplemented by thyrotomy if necessary, was of much more value than the microscope in diagnosis. The removal of a piece for microscopic examination he considers as wholly unjustifiable in view of the fact that it so often is inconclusive and hastens the growth of the cancer and the death of the patient. Thyrotomy he considers justifiable when laryngoscopic examination leaves reasonable doubt as to its true nature or exact territory involved. M. believes that complete laryngectomy and removal of all neighboring lymphatics is the only rational treatment and utterly condemns endolaryngeal operation. In some very early cases, when the seat of the disease is far from the median line,

and the growth not of the most malignant type, hemilaryngectomy may be allowable with removal of all adjacent lymphatics. Thyrotomy, with curettement of the soft parts, he condemns unmeasuredly. The failures of the radical operation in the past he deems due to its incompleteness, and believes that when as thorough work is done for laryngeal cancer as for cancer elsewhere the statistics will show different and far better results.

In the same discussion, D. B. Delavan (6, Sept. 8) gave the *statistics of operative procedures* for the disease in question, but as the different kinds of operations were not distinguished and the number done on the same case not specified, the statistics were of little value. He tabulated 163 operations of eight continental surgeons who published failures as well as successes and found that there were only 6 per cent of recoveries—cases that remained cured after three years.

J. Solis-Cohen (6, Sept. 8) considered the subject of *surgical procedures*. In strictly limited one-sided disease the soft structures alone might be removed by thyrotomy, but partial extirpation was not reliable. In laryngectomy he presented the following points:

1. Operate with the patient's head semi-inverted.
2. Preliminary tracheotomy should be done on account of possible descent of the trachea.
3. Retain the epiglottis if possible.
4. All communication of the mouth with the air passages should be shut off. Slit the trachea longitudinally for a short distance in attaching to the skin.
5. Avoid all dressings. Feeding should be by enema and no tube used through the mouth. Remove the larynx from below upward, and elevate the foot of the bed after operation.

C. C. Rice (1, Aug.) found it often difficult to make an early diagnosis, but he advised giving iodides and waiting till the diagnosis was fully established before turning the case over to the general surgeon for operation. W. K. Simpson would not advise total extirpation until microscopic examination had confirmed the

diagnosis of malignancy. He had operated on one patient endolaryngeally and the man was alive four years afterward.

E. Mayer thought endolaryngeal operations were of very limited applicability.

J. Sendziak (19, Sept., '99; abst. 3, Nov., '99) gives statistics and a general consideration of the *operative treatment* of 640 cases of malignant disease of the larynx. By complete cure, S. means favorable results for three years. By relative cure, favorable conditions for one year. Partial excision covers the cases in which cartilage is removed, while laryngo-fissure is limited to operation on the soft parts.

S. concludes that, with our present knowledge, only operative treatment is justifiable, the results being very favorable if operation is done early. He does not believe total extirpation should be considered quite so unsatisfactory as the statistics would seem to indicate.

Operation, endolaryngeal, 36 cases—Complete cure, 9 cases (25 per cent); relative cure, 5 cases (14 per cent); recurrences, 14 cases (39 per cent); death after operation, none; insufficiently observed, 11 cases.

Laryngo-fissure (thyrotomy), 136 cases—Complete cure, 17 cases (12.5 per cent); relative cure, 17 cases (12.5 per cent); recurrences, 78 cases (57.3 per cent); death after operation, 12 cases (8.8 per cent); insufficiently observed, 16 cases.

Partial excision, 201 cases—Complete cure, 26 cases (12.9 per cent); relative cure, 20 cases (10 per cent); recurrences, 63 cases (31.3 per cent); death after operation, 44 cases (21.8 per cent); insufficiently observed, 27 cases. Some show a favorable result after six, nine and eleven months.

Total extirpation, 267 cases—Complete cure, 12 cases (4.4 per cent); relative cure, 24 cases (9 per cent); recurrences, 81 cases (30.3 per cent); death after operation, 94 cases (35.2 per cent); insufficiently observed, 32 cases. In some the condition good after nine months.

Von Navratil (294, No. 13) discusses this subject quite fully. He reports on fifty-seven primary larynx cancers, all but

two being in men. Thirty-four cases were operated, twenty-three simply diagnosed. Resection was done eight times, total extirpation twice, tracheotomy twenty-four times, subhyoid pharyngotomy once. The tracheotomized cases lived from fourteen days to three months, while one case lived two years and fourteen days. N. considers cure very certain if operation is done early, and all the diseased tissue removed. So-called typical operations are to be avoided and each case treated according to the extent of disease. If the patient is strong, N. does the tracheotomy at the same sitting as the thyrotomy. Make the tracheal opening as low as possible. Of the eight cases of resection, all recovered and lived from nine months to several years. One of the extirpated cases died twenty days after operation, the other was alive and well one year after operation.

Chiari (126, Mar., '99) has had under his care in eleven years, eighty-three cases of laryngeal cancer. Twenty-five were operated on, of whom eight died shortly after thyrotomy, nine died of recurrence between six and eighty-six months after operation, eight remained cured after from twelve to sixty months, six being beyond the three years' limit. C. advocates *thyrotomy* in suitable cases, the limits of operation to be decided at the time of operation.

W. Scheppegrell (70, Aug. 5, '99) thinks the only hope in these cases is based on *early diagnosis* and complete removal of all diseased tissue. He expresses the opinion that "when the malignant disease has advanced to such a degree as to require complete removal of the larynx the prognosis is not only very unfavorable, but many operators have even doubted its justifiability on account of its attending danger, high mortality, and the mutilated condition of the patient after the operation." He gives the mortality of complete extirpation as 84 per cent.

F. Semon (19, No. 11, '99) analyzes his own cases of operations for laryngeal cancer, with reference to Sendziak's new statistics on the subject and concludes that *thyrotomy* is equally as effective as the radical operation in the cure of malignant growths. E. Urunuela, Madrid, (abst. 139, Nov.) favors *thyrotomy* and

the doing of both tracheotomy and thyrotomy at one sitting. D. B. Delavan (68, Mar. 17) advises thyrotomy and removal of all diseased tissue.

Gougenheim and E. Lombard (abst. 2, Nov.) make three divisions of patients with cancer of the larynx: (1) Inoperable, (2) operable, (3) those in whom the rapid progress of the growth renders intervention difficult, or those with other grave disease. Great care should be taken in observing these distinctions since laryngeal operations have been brought into disrepute by lack of care in selecting cases suitable for operation.

Of the operations, endolaryngeal methods can very rarely suffice for complete removal. Tracheotomy is the final resort in inoperable cases. Laryngo-fissure, thyrotomy, with excision of the soft parts, is of limited use, while partial laryngectomy is suited to a large proportion of operable cases. On account of the high mortality of total laryngectomy, it is not an operation of choice. Preference is therefore given to partial laryngectomy, leaving as much of the laryngeal skeleton as may be safely done.

M. Vallas (225, May 10) presents the advantages of *median osteotomy of the hyoid bone* as a means of reaching the lower pharynx, upper larynx, and root of tongue. He calls it simple, easy and benign as compared with other operations for reaching these parts, and a much better operation in all respects.

Thyrotomy.—F. Semon (8, Aug. 11) presents the indications for thyrotomy. He believes that the disrepute into which the operation fell twenty or thirty years ago was largely due to faulty technique and the fact that it was largely resorted to at a stage of malignant disease so late that no operation could avail anything. The improvements in the operation and its use in selected cases have served to reinstate the procedure in favor.

The operation is indicated in the following conditions: 1. For foreign bodies in the larynx, when these are of such nature or so impacted as to render endolaryngeal removal improper or impossible. 2. Injuries such as fracture, bullet wounds, etc. 3. In severe cases of laryngocele. 4. In cases of stenosis of the larynx in which endolaryngeal methods are of no avail. 5. Oc-

asionally in acute laryngeal perichondritis. 6. Laryngeal tuberculosis, but the danger of wound infection is very great. 7. In scleroma of the larynx the most reliable method. 8. In some benign growths of the larynx. In papilloma, however, the tendency to recurrence is so great that thyrotomy is rarely justifiable. 9. In malignant disease of the larynx. S. urges that the general practitioner should be impressed with the fact that cachexia, pain, swelling of the cervical glands, fetor of breath, and expectorations of blood, instead of being the usual symptoms of cancer of the larynx, as a rule only occur in the later stages of the disease, and one or several of them may never appear. It should be generally known that the only early objective symptom is usually hoarseness, and that in any one above 50 the continuance of an inexplicable dry hoarseness for any length of time should awaken suspicion enough to warrant skilled laryngologic examination. If then these cases can be seen at an early stage, thyrotomy offers the greatest prospect of cure with the slightest mutilation. By selecting his cases and operating early, S. reports that he has been able to lastingly cure 83.3 per cent of his patients. He urges that thyrotomy be not brought into disrepute by operating on late cases, as its real usefulness lies only in the early stages. He concludes by stating his belief that the chief indication for the employment of thyrotomy will in the future be found in early intrinsic malignant diseases of the larynx.

At the same meeting, International Medical Congress, Paris, E. Urunuela, Madrid, (abst. 1, Oct.) considered the indications and technique of thyrotomy. The indications given are about the same as those of Semon. Schmiegelow presented the technique of the operation (abst. 2, Sept.). Tracheotomy is first done, Hahn's tube with a plug being used. After the incision in the thyroid cartilage, plug the lower pharynx to keep the saliva from the larynx. Use cocain to lessen the sensibility of the mucosa of the larynx, the entire operation being done under general anesthesia. After the operation and cessation of bleeding, the cannula is removed and the interior of the larynx powdered with iodoform. The dressing over the wound is changed several times

during the first few days. The patient lies flat until after five or six days, when the wound will be sufficiently healed to allow him to get up.

Goris, Brussels, read a paper on the immediate and remote effects of thyrotomy. He had received written reports from specialists comprising 105 cases. Of these, sixty-two operations were for malignant growth, fourteen for tuberculosis, twenty-five for benign tumors, two for stenoses, one for foreign body, one for rhinoscleroma. Of the 105, four died of pneumonia within eight days of the operation, giving a mortality of less than 4 per cent, and placing the operation in the list of safe ones. Of the cancers, fifty-five were in men, three in women, the sex not stated in four. As to age, below 30, none; 30 to 40, 4; 40 to 50, 14; 50 to 60, 20; 60 to 70, 18; 70 to 75, 4; age of two not stated.

The results as to voice varied with the extent of the operation; removal of a vocal cord usually permitted certain sounds. Sometimes a cicatricial band formed giving an excellent voice.

Most of the malignant growths being carcinoma, the results of all are grouped together. In seven of the sixty-two cases extirpation of the larynx was done, in six the operation was too recent for conclusions. Of the forty-nine remaining, twenty-three were alive at periods of from two to ten years after operation, being 46.9 per cent. In addition, seven of the more recent cases had survived more than one year without recurrence. Of the fourteen operations for tuberculosis only three were cured, the others being harmed instead of helped. In the twenty-five benign tumors the results as to voice were generally good. The operation was most often done for papilloma and while the best operation for that condition, it did not completely prevent recurrence. One case of stenosis was cured, the other not. In the case of rhinoscleroma, Chiari obtained perfect cure by excision of the swelling under the glottis.

Gluck (abst. 2, Nov.) describes his methods in *major operations* on the larynx. The general statistics showed a mortality of 54 per cent after these operations in 1881, and 46 per cent in 1891. G. has operated on sixty-one cases of cancer of the larynx.

At first his results were bad, but in his last thirty-five cases there were only three deaths and in fourteen hemi-laryngectomies no death. These are the best results ever attained.

Supposed Cancer, Recovery.—F. Semon (2, Feb.) presented to the London Laryngological Society an interesting case of *supposed mistaken diagnosis*. The patient, a man of 40, had been pronounced to have a malignant neoplasm of the larynx, Semon, Butlin and Cheyne and Thomson agreeing on the diagnosis. Operation for laryngectomy undertaken by Cheyne was abandoned on account of the very general infection of the neighboring glands. No microscopic examination was made. A tracheal tube was inserted and allowed to remain. One year later the patient reappeared with all symptoms much improved and all glandular enlargement gone. He had been taking a mixture containing Chian turpentine. St. C. Thomson cited a similar case which had occurred under his observation.

In the course of the discussion Semon stated "that if one met with a growth of particularly snow-white color, which at first sight looked like a papilloma, but the eminences of which were not nearly so bulbous and rounded as in papilloma, but sharply pointed, like grasses, it was extremely suggestive of malignant disease.

Carcinoma.—T. H. Farrell (1, Oct.) did a *thyrotomy* for carcinoma in a man of 54. The symptoms had been present about three months before F. was consulted and the operation was done one month later. The epiglottis and all the soft parts were removed. A number of complications occurred, but the patient recovered and there was no recurrence in the larynx one year later, but the lymphatics of the neck were showing recurrence of the growth and rapidly enlarging. F. believes the tracheotomy which was done at the time of operation should have been done before.

E. Meyer, Berlin, (80, No. 52, '99) removed a good-sized carcinoma from the vocal cord of a man of 58 with no recurrence six months after. The removal was done *endolaryngeally* at sittings during a period of three months.

E. Barth (5 BX. p. 330) removed a carcinoma weighing 4 gm. from the posterior half of the plica aryepiglottica with the *hot snare*. Inoperable gland-tumor in the neck contra-indicated radical operation on the larynx. Recurrence after five months, which was removed. Metastases in esophagus and stomach with death ten months later.

Navratil (2, June) reports a carcinoma the size of a walnut involving the left false and true cords in a patient who had been *hoarse for ten years*, the beginning of the growth probably dating back to that period.

Duvivier (52, Apr. 29) exhibited a larynx completely invaded by cancer, no trace of the vocal cords remaining. In this case *only five months elapsed* between the first symptoms and the death of the patient. The symptoms were very slight, there being no pressure symptoms, no hemorrhage or pain, and no secondary growths.

Luc (11, No. 22) discovered a small growth, size of a raisin seed, at the anterior commissure in a man of 51 who had shown aphonia and stenosis for two years. A piece removed was declared to be *epitheliomatous*. Luc did a tracheotomy followed by thyrotomy, and removed the growth, the anterior part of both cords and a piece of the thyroid cartilage, cauterizing the wound with the galvano-cautery. The canula was left in and healing occurred in two months; no recurrence after eight months.

A. Courtade (abst. 2, Nov.) used a soft rubber catheter through the tracheal opening with complete relief in a case of *epithelioma* of the larynx and trachea in a man of 40 in whom neither the ordinary tracheal canula nor a flexible metal canula could be worn. The patient survived six months and breathed comfortably through the catheter. External granulations were kept down by swabbing with pyoctanin.

C. H. Knight (1, Mar.) records a case of *epithelioma* in a man for whom tracheotomy was done preliminary to laryngectomy, but such relief ensued that the later operation was refused, although the neoplasm steadily enlarged.

A case is reported by J. F. McKernon (1, Mar. and Apr.) in

a woman of 57 in which the entire lower portion of the larynx, the esophagus and pharynx were involved. Tracheotomy was done two days before operation. Five days after operation pneumonia developed and yet the patient recovered.

F. J. Lutz, St. Louis, (17, Feb. 24) did a *subhyoid pharyngotomy* for the removal of an *epithelioma* of the larynx in a man of 73. The interesting features of the case were the use of hot water infiltration for local anesthesia and a 4 per cent cocaine solution on the mucous membrane, thus avoiding general anesthesia and preliminary tracheotomy. The tumor was large and was found to extend downward into the esophagus. (E. Mayer (1, Aug.) calls attention to the fact that many cases diagnosed as laryngeal cancer show the origin of the growth to be in the esophagus.) The growth lay principally above the glottis and caused great dysphagia and dyspnea, for relief of which the operation was done. The wound healed readily and the patient lived one month.

Sarcoma.—F. Massei, Naples, (63, Oct., '99) maintains that it is clinically indisputable that there is a connection between multiple idiopathic hemorrhagic sarcomata of the skin, and endolaryngeal sarcoma, and describes five cases in which Kaposi's *sarcoid of the skin* was followed by endolaryngeal sarcomata. These growths attack the posterior parts of the cords, the arytenoids, epiglottis and hypoglossal tract. M. suggests prompt surgical removal, since some cases of the cutaneous variety have been cured by early operation. He thinks the disease a general one, due to a specific agent.

Laryngectomy.—N. Taptas, Constantinople, (126, Vol. 26, No. 1) reports a total laryngectomy for *sarcoma*. The patient was fitted with an external artificial larynx devised by T., with satisfactory results. The patient could emit sound and could swallow without food or saliva reaching the tracheal portion of the canula. Recurrence was taking place, however.

Schuchardt, Stettin (80, No. 2) did a total extirpation including epiglottis and several tracheal rings. The patient could

swallow good, had no pharyngeal fistula and could use an artificial larynx of the Gluck pattern.

A. T. Bristow (68, Mar. 24) removed larynx and epiglottis on account of *carcinoma*. Seventeen days later he exhibited the patient at a medical society. During the operation B. noticed that any strong tugging laterally on the trachea caused respiration to cease.

J. S. Gibb (1, Oct.) reports a complete laryngectomy done for *epithelioma* in a man who had noticed the first laryngeal symptoms two and one-half years previously. Preliminary tracheotomy was not done, which was afterward regretted both by the operator, G. G. Davis, and Gibb. Eucaïn anesthesia was used. The patient was in splendid condition physically, but succumbed the fifth day after operation from septic infection. A full description of the case, operation and pathology is given.

In the discussion following this paper (D.) the participants were generally opposed to the operation.

G. F. Hawkins (61, Jan. 20) performed a *hemilaryngectomy* for *epithelioma* in a man of 42, a preliminary tracheotomy being done. A good recovery ensued with ability to talk in a loud whisper and with little dysphagia. Tracheotomy tube and packing were removed on the eleventh day. Seven weeks after operation there was no recurrence.

Goris (120, No. 31, '99) removed a *half* of the larynx on account of one-sided *carcinoma*. Complete healing occurred.

C. H. Knight and W. K. Simpson are uncompromisingly opposed to complete extirpation.

J. Wright, New York, thinks it proper under favorable circumstances (1, Mar., p. 160-1).

D. Grant (2, July) did the *complete operation* on a woman of 49 for *sarcoma*. Patient was doing well one month after operation. At a later meeting of the society (A.) G. showed the patient (2, Aug.) in a comparatively comfortable condition with the parts healed. This was four months after the operation.

Operation, Danger of.—G. W. Crile, Cleveland, (7, Mar. 31) from a number of experiments on deeply anesthetized dogs reaches

the conclusion that the cause of sudden death in laryngotomy and intubation is the mechanical irritation of the middle and upper part of the larynx. He would avoid danger in the former by first making an opening through the crico-thyroid space and brushing the dangerous area with cocain. A hypodermic of atropia before either operation would also help to prevent the reflex on the heart.

Where sudden death occurs in intubating he considers it usually due to the irritation of this dangerous area. The symptoms occurring in asphyxia, due to pushing down the membrane, are very different from those in the sudden death alluded to. In asphyxia there are always more or less violent efforts at respiration and the heart momentarily beats stronger, whereas in the death from the reflex the breathing usually stops suddenly and the heart immediately becomes weak. The method of treatment in the two cases is quite different. In the collapse due to reflex inhibition the head should be instantly lowered, instead of as usual keeping the child in a sitting position, while further manipulation of the tube is attempted. A cold, wet towel should be slapped on the chest and the surface immediately dried, then the slap repeated, etc., artificial respiration in the meantime being kept up. If the collapse be due to obstruction by membrane, the tube should be at once removed and respiration encouraged as above, when the membrane will be almost certainly expelled.

EPIGLOTTIS.

B. Rischawy (15. July 9. '99) reports a case of *complete adhesion* of the epiglottis to the base of the tongue, due to syphilis. There was no trouble with food passing into the larynx. R. takes up for consideration the *act of swallowing*. He finds the closure to be effected by the structures lying above the larynx, which are, 1, a fatty cushion which is limited above by the hyo-epiglottic membrane, posteriorly by the epiglottis itself, and an-

teriorly by the thyro-hyoid membrane; 2, the hyo-epiglottic membrane; 3, the base of the tongue.

The physiology of the act of swallowing is in brief: The larynx rises to the hyoid bone, which is also elevated. This compresses the fat cushion from above downward, causing it to press the epiglottis downward. The ary-epiglottic folds fit snugly along the posterior border of the epiglottis. At the same time the upper laryngeal cavity contracts until the vocal cords and the vocal bands are in contact. The arytenoid cartilages approximate each other. The hyoid bone and the larynx are drawn forward under the tongue. Next, a downward and forward motion of the root of the tongue occurs, so that the epiglottis lies in the glosso-epiglottic fossa, which has been drawn under the root of the tongue. Pressure of the fat cushion and the epiglottis against the base of the tongue so that they are driven into the upper laryngeal space like a stopper.

Abscess.—A. C. Howe (6, Oct. 28, '99) reports a case of abscess of the anterior surface of the epiglottis in a man of 24. The symptoms were laryngeal tenderness, increasing dyspnea and dysphagia of three days' duration, inspiration being more difficult than expiration.

L. Przedborski (240, No. 8) reports a circumscribed abscess of the left side of the epiglottis in a patient of 16 years. The dysphagia, dryness, etc., began fourteen days after an attack of measles. Ten days later the abscess was opened successfully.

Tumors.—H. D. Hamilton (58, Aug., '99) reports a case of *cyst* of the epiglottis in a youth of 18. The cyst was as large as a hen's egg and filled the lower pharynx, causing dysphagia, nasal voice, snoring and cough. The treatment was by evacuation and the injection of a few drops of 5 per cent carbolic acid solution in glycerin and water. This was repeated at intervals of a week for four weeks, the recurrence being smaller each time. Tonsillitis then occurred and the cyst wall sloughed.

W. L. Bullard (6, Aug. 25) records a case of *cyst* of the anterior surface of the epiglottis in a lawyer 52 years old. The

growth was about 1 cm. in diameter. Incision and application of chromic acid cured.

E. F. Ingals (6, Dec. 9, '99) removed a large *fibro-lipoma* from epiglottis, base of tongue and side of pharynx in a man of 28. Adhesions resulted, but without discomfort to the patient.

H. G. Croly (221, April) performed tracheotomy on a male patient of 42 who had an *epithelioma* of the epiglottis and larynx, with the result of decreasing the size of the tumor and also the enlarged cervical glands.

M. Valles (225, May) thinks that some of the difficulties of operation on the lower pharynx and epiglottis are obviated by *osteotomy of the hyoid bone*. He describes the operation and reports a number of cases in which it was successfully done.

VOICE.

W. Scheppegrell (1, Aug.) discusses the *physiology* of the voice and shows the great harm done to the speaking and singing voice in many instances by the faulty placing of the voice. It is the quality or rather the timbre which determines the class of the singing voice, and it is a grave mistake for the teacher to place a voice in the class to which it does not naturally belong.

Abdominal respiration is the best for the singer or speaker.

W. A. Aikin (2, Oct.) presents an article on the *resonator* of the voice. A scale is given showing the relation of the vowel tones to each other, the position of the vocal organs for "ah" being given and from this the others are deduced by definite alterations of the lip and tongue. The article, though brief, is a valuable study.

Flatau (15, No. 29, '99) insists that a singer should cease singing as soon as a wrong intonation is noticed. Begin treatment early. F. uses the Faradic current in the moment of phonation, and electro-massage with soft compression. If the disturbance does not yield within a reasonable time he uses the following procedure: The patient opens his mouth and bends the head

forward slightly; then Flatau quickly puts one or two fingers of the left hand into the valleculae and presses very hard towards the front and a little above.

Shech (13, No. 37, '99) reviews the works of the past five years and emphasizes that all functional diseases of the singer or speaker are associated with premature fatigue of the voice. At first there are only disagreeable subjective sensations, later the voice becomes impure, faint or double-toned, then the timbre becomes throaty, thick, or nasal. The causes may lie in defective technique, bad schools, or unhealthy mode of life, or diseases of the blood, heart or other organs, but the chief causes are pathological changes of the upper respiratory passages.

Aphonia.—G. Spiess (5 B. 9 H. 3) calls attention to the irregular and *incoordinate contraction* of the voice muscles in the cases of obstinate nervous aphonia, in severe cases amounting to a spastic condition of one or more muscles. The muscles of the tongue, mouth or neck may be affected also. Passive movement and massage followed by a plan of deep respiration and the methodical practice of certain vowel sounds will nearly always bring cure.

M. Grossmann (19, May) divides *hysterical aphonia* into two groups, (1) when on attempted phonation there is seen a broad oval cleft between the cords; (2) the much rarer form in which the anterior parts of the cords overlap and there remains a triangular space posteriorly. By experiments G. demonstrated the latter form to be due to functional disturbance of the superior laryngeal nerve with resulting impaired action of the crico-thyroid muscle. The latter muscle is shown to be primarily a phonation muscle, causing extension and adduction of the cords, but it is also a muscle of deglutition and respiration.

In a discussion (2, Mar.) of this subject, Semon stated that in his experience the vast majority of these cases could be cured in one sitting by intra-laryngeal applications of electricity. Much energy is necessary in some cases, however, and in some cases nothing seemed effective.

M. Opp (13, May 22) gives as characteristic features of

hysteric aphonia: 1. Exclusive involvement of the constrictors of the glottis, some modes of voice production being retained. 2. Sensory disturbances in the pharynx and glottis. 3. Preservation of the electric and reflex excitability of the laryngeal muscles. A cure may result from psychic emotion. Local massage is of value, but the surest treatment is electricity, particularly faradism.

Baumgarten (78, No. 40, '99) besides the ordinary forms of treatment has had good results in some stubborn cases by pressure on the ovaries and also from the use of Kirstein's tongue depressor.

Roth (14, Feb. 22) had a case in which at the moment of phonation the false cords approached each other completely, leaving only a small rounded opening posteriorly through which the true cords could be seen also in close contact except a still smaller opening at the posterior extremity. The condition would be brought on by emotional excitement and could be terminated by a marked irritation of the front of the neck. R. thought the aphonia due to *overactivity of the thyro-arytenoideus superior*, this muscle bringing the false cords together and forcing them down into contact with the true cords, thus preventing vibration of the latter.

Stammering.—P. Ollivier (abst. 4, No. 1) considers stammering a neurosis of coordination, a purely functional trouble characterized by the convulsive repetition of certain words or syllables. He rejects all surgical treatment for the disease and depends on careful training by exercises, the most essential factor being the acquiring of absolute control of the respiratory organs by the patient.

G. H. Makuen (6, Sept. 23, '99) in the case of a man of 29 who had stammered from the beginning of speech, taught the patient to exercise the levator and depressor thoracic muscles in order to overcome the respiratory impediment. This mechanism was then combined with the vocal mechanism in making elementary sounds and syllables, and by persistent practice effective speech was gained.

J. C. Connell (115, Jan.) believes with Makuen that the proper line of treatment in these cases is a combination of gymnastic and didactic methods. Treatment should begin with exercises in breathing, then systematic exercises in vocal gymnastics.

Stuttering.—R. Coen (Vienna) (1, Feb.) gives his principles of therapeutics for the treatment of stuttering as evolved during twenty-five years' experience. Breathing gymnastics properly carried out constitutes an absolutely essential part of the treatment. In these exercises the principal movements are:

1. The deep continued inspiration.
2. The short expiratory movement of the breath.
3. The gradual prolonged expiration.
4. The holding of the breath.

The diaphragm is given special consideration, and these exercises should precede all voice and speech exercises. After this the voice and organs of speech receive special drilling, the vowels and diphthongs being first enunciated slowly, then gradually increased in intensity and rapidity. An easy pitch must be selected. Single syllables are next taken up, then words and phrases, all being strongly accentuated and loudly pronounced, but an even tone and pitch employed.

Miscellaneous.—Zwillinger (187, No. 9) recommends that all singers undergo examination by a competent laryngologist at the commencement of their musical career so that pathologic conditions, especially in the nose, may be corrected. Z. differentiates habitual hyperemia of the singer's larynx from chronic catarrh by the absence of the dark grayish-red color and dilated vessels of the latter.

Sir F. Semon (2, July) showed a boy (A.) who was able to make a whistle which sounded as though made in the ordinary manner and yet was made with the mouth wide open and demonstrated to be produced in the larynx.

J. Mount Bleyer (4, Sept.-Oct.) gives an illustrated article on the subject of "Voice-Pictures; or, the Wonders of Sound-Force.—Their Production and Their Photography." One of the objects of the article is to show how the telephone and the phonograph reproduce the sounds entering them even when these sounds are many and different at the same moment. The paper is very interesting and well worth reading. He concludes with the statement that it is now a demonstrated fact that sound-force can be made visible in form of geometrical and pictorial figures.

TRACHEA.

G. Pisenti (63, Fasc. 3, '99) gives an account of two very instructive cases of *catarrhal hemorrhagic tracheitis*, one a young man of 22, the other a youth of 18, each of whom had had several hemorrhages. Repeated examination at prolonged intervals failed to show any pulmonary disease, but a varicose condition of the tracheal veins was found in each case. There was a heredity of varicose veins in both cases.

Courtade (43, Oct., '99) had a case of aneurism of the arch of the aorta in a man of 45, in whom from *compression of the trachea* symptoms closely resembling those of abductor paralysis were produced. The larynx, however, on examination was found normal.

A. Caillé, New York, (121, Aug.) reports a case in which death occurred in a girl 4 years old from perforation of a *tuberculous bronchial lymph node* into the trachea. The child presented no symptoms other than those of bronchitis, with no fever, no pain, and but little cough, until the rupture occurred, when cyanosis and asphyxia occurred, resulting in death in a few minutes. In the discussion following (Am. Pediatric Soc. 1900) the impossibility of diagnosis in these cases was conceded by most of the speakers.

Stenosis.—Pieniazek (abst. 1, Oct.) states that stenosis is most frequently the result of scleroma, very rarely of syphilis, and is sometimes congenital. For treatment, tracheotomy above the stenosis is done, and with the patient's head hanging over the edge of the table a tracheal speculum is inserted, the parts examined and curetted. A tracheotomy tube is left in for 3 days.

Bayer (11, Mar. 10) reports a case of *nearly complete occlusion* of the trachea in a man of 30, originating in the cicatrix of a tracheotomy done 26 years before. The patient contracted syphilis at 23, and 7 years later the tracheal symptoms caused by a mass of granulation tissue required relief. Operation was refused, but appropriate treatment and massage internally and externally over the site of the tumor resulted in complete cure.

Mohinie (126, Apr., '99) records a case of *membranous occlusion* of the trachea by a horizontal diaphragm $\frac{3}{4}$ inch below the cords. The man had a severe attack of typhoid at 16 and pains and dry cough in the throat 2 years later. Dyspnea began 2 years before M. saw the patient. There was an atrophic condition of the nose and trachea ("nasal and tracheal ozena") and M. considers the occlusion secondary to this. Dilatation by Schroetter's tubes was successful. Eight other cases are quoted.

P. Reinhard (19, June, '99) had a case of tracheal stenosis in a girl of 18, the *result of a low tracheotomy* done 12 years before. Dyspnea became very urgent. Two red symmetrical swellings were seen at the fifth tracheal ring which almost occluded the lumen. Cure was accomplished with Schroetter's tubes passed daily for a fortnight and then less frequently for some time after. The tubes were left in 2 or 3 minutes at first, but later for 10 minutes.

Schulz (80, No. 29, '99) describes a case of stenosis in a patient 18 years old, *resulting from tracheotomy* 14 years previously. S. obtained cure by rubber bougies and later, flexible spiral german-silver sounds.

Tracheotomy.—Moure (abst. 7, Sept. 29) finds that with a high incision for tracheotomy there is much more danger of complications arising at the time of removal of the tube than

when the incision is lower. The incision should be as low as the second tracheal ring, if possible, and the tube should be removed at the earliest moment.

Thomas (18, June 28) met a *rare complication* in an attempt to perform tracheotomy on a child of 2 years suffering from laryngeal diphtheria. An incision in the middle line failed to reveal a trachea. The larynx was found crowded close down on the sternum. Thyrotomy was done without avail. Autopsy showed the sternohyoid muscles to be greatly degenerated and contracted, appearing as fibrous cords. These had drawn the larynx down and on cutting them the larynx arose and the trachea came back into the neck.

Gersung (14, June 28) recommends a *funnel-shaped tracheal tube*, claiming advantages for it in spite of the larger tracheal wound necessary for its introduction.

C. A. Meisenheimer (179, Feb.) thinks that tracheotomy should be at once done in cases of foreign bodies in the air passages in order to relieve the patient of danger of suffocation. M. reports 5 cases of tracheotomy for foreign bodies, with prompt recovery in all.

Cut Throat.—E. R. C. Earle (8, Oct. 28, '99) discusses the question of immediate closure of the tracheal opening in cases of cut throat and concludes that under present-day aseptic surgery the wound may be immediately closed if seen very soon after it is made, but if much time has elapsed it is advisable to leave a part of the aperture unclosed, so that asphyxia may be averted in case of great swelling within the trachea. E. reports two cases that were exposed to specially unfavorable circumstances and yet progressed uninterruptedly to perfect recovery.

Operation.—H. Aue (55, B. 61, H. 1) reports an interesting operation for a *tracheal defect* caused by swallowing boiling water twelve years before. The opening was in the anterior wall of the trachea and measured 5 cm. by 2 to 3 cm. There was stenosis of both larynx and trachea from the excessive connective-tissue formation. As a first step in the operation, this con-

nective tissue was removed and the raw surface covered by a skin flap from the neck. An osteo-cutaneous flap was taken from the sternum to form the anterior wall, this flap being so prepared as to have skin on both surfaces of the bone. The sternal wound was covered in by a third operation, and all the results were very satisfactory indeed.

Tumors.—J. Lemoine (Thèse de Paris, 1899) classifies tumors of the trachea as benign (vegetations following tracheotomy), and malignant. Out of ninety-nine cases published, only thirty-four were diagnosed by the laryngoscope, most of the cases only being determined at autopsy.

There were twenty-six benign tumors, of which fourteen were operated with ten cures, while in the twelve not operated on, ten died.

Apert (82, June 8) reports a case in a man of 43, who had a tumor in the neck, a paralyzed vocal cord and some stridor. Suffocation arose suddenly, necessitating tracheotomy, which did not relieve till a long tracheal tube was used. On the death of the patient four months later the autopsy revealed *cancer* of the esophagus, spreading to the trachea, the dyspnea being due to the tracheal growth, not to pressure from the primary tumor.

P. V. Bruns (abst. 2, July) resected the posterior and left wall of the trachea to the extent of ten tracheal rings for *primary carcinoma*. The patient survived six years, dying from recurrent stenosis. These tumors are round, with broad base and smooth surface. The prognosis of operation is not bad since it is usually the beginning or middle part of the trachea that is affected.

E. Boschi (219, 1900) describes a case of *primary cylindrical epithelioma* of the lower half of the trachea in a man of 60, in which the symptom of tracheal tugging was quite pronounced in the latter period of the disease.

G. H. Powers (184, Feb.) reports a case in which tracheotomy was done, but the growth extended below the tube and the patient died during the operation.

THE BRONCHI.

Bronchitis, Treatment.—C. A. Penrose (272, Nov.) has had excellent results in *chronic bronchitis* and diseases of the lungs from the use of an inhalant of beechwood creosote four drams, turpentine four drams, and Tr. Benzoin Co. three ounces. A teaspoonful of this mixture is put into a suitable inhaler with boiling water and the steam inhaled for ten minutes two or three times daily. In the worst cases he uses oxygen passed through the liquid. When the patient becomes accustomed to the inhalant equal quantities of the three ingredients are used.

R. W. Wilcox, New York, (123, May) recognizes the tendency of *bronchitis in the aged* to become chronic. Expectoration should be lessened, but not by belladonna. Active expectorants, as apomorphia and cocillaña, are to be avoided. Five to ten grains of carbonate of ammonia in milk acts well for a few days during acute exacerbations. Strychnine is also valuable. Purulent expectoration is to be disinfected by twenty-drop doses of creosote carbonate in sherry every four hours, avoiding creosote in the aged. Opium is strongly condemned. Massage, with especial attention to the chest, yields brilliant results. The general health should be carefully looked after.

Bronchitis, Fibrinous.—Schittenhelm (223, B. 67, H. 3 u. 4) reports two cases and gives a very careful account of the *pathologic findings* in one of the cases which died. The casts contained much fibrin. The mucous membrane of the bronchi was practically normal, but there seemed to be a desquamation from the alveoli. Only streptococci were found.

Ott (13, July 10) reports a case in a boy of 15, in which examination of the coagula showed the pneumococcus and staphylococcus pyogenes aureus. The patient was a metal polisher and Ott thinks the metal dust may have been a factor in the etiology.

H. Strauss (80, May 7) reports a case of the disease in a man of 58, which resisted all treatment, but subsided after the patient had an attack of influenza. There was no asthma in the case.

L. Masciangioli (261, Sept. 27) reports a case of *acute fibrinous bronchitis* due to influenza. The symptoms were grave from the onset of the influenza.

Bronchial Glands.—J. N. Hall (abst. 7, Sept. 1) remarks the little mention of disease of the bronchial glands in American literature. These glands are enlarged in leukemia, pseudoleukemia, leprosy, syphilis and general tuberculosis. They are the seat of primary new growths also. Simple lymphadenitis may arise in any acute or chronic process involving lungs or pleura. The enlargement may be sufficient to cause pressure symptoms of the neighboring organs. The medicinal treatment is that of lymphadenitis in general. Counter-irritation is of value. Sudden dyspnea, especially in children, unless other obvious cause appears, if there be reason to suspect broken-down bronchial glands, should be as vigorously treated as a foreign body in the bronchus.

T. P. West (119, Oct. 12, '99) describes eight cases in which he made a diagnosis of *enlargement* of the bronchial glands. The children were brought on account of cough. All had large tonsils, six had enlarged axillary glands, and five enlarged inguinal glands.

Baurowicz (abst. 2, Feb.) reports two cases of *stenosis of the bronchi* from pressure of enlarged tubercular glands in the mediastinum. One ended fatally and the diagnosis was confirmed.

K. Reimer (291, No. 35, '99) records the death of a girl of three years from the breaking of purulent glands into the bronchi. A necrotic piece rested on the bifurcation, causing complete asphyxia.

Foreign Bodies.—G. Killian is accomplishing wonders by his skill in bronchoscopy. He reports (80, May) discovering a *carcinoma* in a small bronchus which percussion and auscultation failed to reveal, and which radiographs showed too dimly to be of much service. The tumor was not seen, but the bronchus leading to it was shown and the diagnosis shown to be correct on autopsy.

F. T. Stewart (17, Dec. 15) cites a number of illustrative cases of foreign bodies in the bronchi, from the records of the Pennsylvania Hospital, and discusses methods and results of treatment. He believes that the mortality in these cases would be much reduced if tracheotomy were done immediately in all cases in which inversion failed to relieve.

G. Killian (18, Mar. 8) removed a *piece of bone* 15 mm. by 11 mm. from the right bronchus of a man, which had been aspirated into the lung four years previously. During the four years the man had had right-sided pleurisy and chronic bronchitis, with dullness over the right lung. Having failed to see into the trachea by laryngoscopy and direct bronchoscopy, K. tried *lateral bronchoscopy* and detected the foreign body lying at the entrance to the right bronchus. Owing to the excessive mucus it was impossible to work by sight, so the bronchoscope was pushed down to the level of the foreign body and the latter seized by forceps and withdrawn.

H. v. Schroetter (14, No. 51, '99) removed a *lead seal* three-tenths of an inch in diameter from the bronchus of a boy of 12 by the *natural passages*. The body could not be seen by bronchoscopy, but the X-ray showed it at the level of the fourth rib on the right side of the sternum. Later, however, it could be seen in the second division of the bronchus. S. had a special forceps made to use in the Schroetter handle, the tube being nine and one-third inches long and one-quarter inch in diameter. With this the foreign body was removed under cocain anesthesia, with little discomfort to the patient.

J. F. Crombie (9, Mar. 31) had a case in which an amber mouth-piece one and one-eighth by one-half by five-sixteenths inches, was retained in the bronchus for ten weeks and then coughed up, with complete recovery from very serious lung symptoms.

Longbois (82, Feb. 21) reports the case of a girl who wore a tracheotomy tube from the ninth to the fifteenth year. The outer cannula (silver) broke and fell into the trachea, and was discovered by radioscopy to be lying at the first division of the

right bronchus, from whence attempts to remove it failed. Three and one-half months after the accident the girl remained quite well.

Hecker (13, Aug. 14) reports a case in a boy of six and one-half years, who had received a heavy blow on the chest, followed by a temporary dyspnea and later by fever. A month after the accident a diagnosis of chronic pneumonia was made. Three weeks later death occurred and a piece of lead pencil 21 mm. long was found in the left bronchus, the left lung showing an interstitial pneumonia and some gangrene. The patient had apparently had the piece of pencil in his mouth and inspired it at the moment of the blow.

G. W. Armstrong (61, Sept., '99) reports a tracheotomy for the removal of a melon seed from the left bronchus of a child eighteen months old, where it had been nine months, causing many suffocative attacks. The seed was coughed out through the tracheal wound immediately after operation and recovery ensued.

Goullioud (237, July 18) removed a nail two inches long from one of the intrapulmonary bronchi by means of a powerful electro-magnet passed through a tracheotomy opening.

Garel (225, Aug. 10) reports a case of exactly the same kind relieved in the same way.

B. Hamilton (9, July 7) performed tracheotomy for the removal of a bean impacted in the air passages of a boy of 12 years. The bean was at once expelled and recovery ensued. Operation was done on the second day of impaction.

W. O. Shields (39, Aug. 15, '99) reports a one and one-quarter inch foreign body coughed up after three months. J. M. Patton (7, Aug. 5, '99) was just opening into the thorax to remove a chicken bone from a bronchus, but at the moment the lung tissue was reached the bone was coughed out at the mouth.

Successful operations for removal of foreign bodies are reported by E. Vignard (251, Dec. 16, '99), a coffee grain from a child of two and one-half years, seven days after entrance; J. Crisler (290, Dec., '99), a grain of corn from a child.

H. T. S. Bell (61, Dec. 20, '99) reports the *death* of a seven-year-old girl after a six-weeks stay in the hospital for symptoms accompanying a consolidation of the right lung. The child claimed to have inhaled a button, but no proof of the statement could be obtained. Death occurred suddenly from the button becoming loosened and lodging over the left bronchus.

Tumors.—C. G. Nicolas (abst. 42, Feb. 24) has collected a list of thirty-five cases of reported *primary epithelioma* of the bronchi. He studies the question fully. The symptomatology is that of lung tumors. The diagnosis is very difficult and often impossible. The Röntgen ray gives aid in determining location and size. The course is rapid. The abstract from which this note is taken is very complete.

THYROID GLAND.

G. Gauthier (224, May 10) maintains that the thyroid secretion, vitiated by old or recent glandular lesion, is the true cause of the symptoms in Basedow's disease. Everything tends to indicate that the vitiated, and hence injurious, substance affects first and chiefly the region of the medulla and pons, as most of the symptoms suggest a bulbar origin; but in addition to this action on the nerve-centers, the modified thyroid secretion also profoundly affects the organic interchanges. The phenomena caused by exaggeration of metabolism, such as fever, emaciation and nutritional disturbances, are the direct consequences of the chemical and medicinal action of the abnormal, toxic, thyroid secretion. Gauthier establishes, among other points, that normal thyroid products in the blood favor the mammary secretion and reduce utero-ovarian activity. He also affirms that there is a direct relation of cause and effect between the functional behavior of the thyroid body and that of the nervous system. The thyroid does not have merely symptomatic or reflex action, like that of the ovary and uterus, for instance, but has a direct and close influence on the development of the nerve-cells, and later, on their

nutrition. All the pathologic conditions known as "nutritional" can be traced to defective action of the gland, and thyroid treatment may prove effective in curing them.

L. B. Mendel, (290, Jan.) finds more iodine in the accessory thyroid glands than in the main gland. He confirms the statement that the thyroid gland of the new-born contains no iodine.

Acute Inflammation.—D. B. Kyle (3, May) reports two cases, the only ones he has observed, of acute thyroiditis, both in males 24 years old. The disease is one rarely reported and seems to be not very frequent. The enlargement of the gland is due to interference with the discharge of the secretion into the lymphatics by reason of the inflammation of the capsule of the gland. The treatment is that of glandular inflammation in general.

H. Illoway (3, May) reports a case of acute thyroiditis of *rheumatic* origin in a single woman of 22. While admitting the correctness of the view that the French writers have ascribed the disease far too often to rheumatism, yet in the case reported, I. believes the course and sequence of the disease leave small room for doubt as to its nature. Suppuration supervened and recovery rapidly followed incision. In the same patient a rheumatic pharyngitis preceded the thyroid attack.

A. Stengel (159, June) finds *acute enlargements* more pronounced as a rule in anemias following hemorrhage than in chlorosis, and the associated symptoms constitute a picture very much like Grave's disease. He calls attention to the sudden enlargements of the normal thyroid which may occur from nervous excitement; from intoxication and various infections; at the onset or in the course of exophthalmic goitre; and sometimes in cases of ordinary goitre or of malignant disease.

A. Schudmak (14, July 19) records a case of *post-typhoid suppuration* of the thyroid, being the thirteenth of which he can find record. A pure culture of the typhoid bacillus was found in the gland on the ninth day from the beginning of suppuration and thirty-nine days from the beginning of the typhoid.

Cancer.—A. Poncet and A. Riviere (abst. 139, Aug.) have seen fifty cases of cancer of the thyroid and conclude it to be much

commoner than is usually thought. All of the tumors developed in goitres. *Epithelioma* is the usual form. The symptoms are: 1. Rapid enlargement of the gland and change in its function. 2. More or less severe pain. 3. Swelling of lymph glands. The prognosis is bad, the average duration being only three to six months. Only in the encysted form is extirpation possible. On the other hand, Barker (68, Feb. 17) remarks that the usual course of malignant growth of the thyroid is *very slow*, and mentions a case he had seen which had lasted eighteen years.

M. D. Lederman, New York, (1, Mar.) reports a case of *capillary adenoma* of the thyroid which caused laryngeal symptoms, hoarseness from paralysis of the left cord, for several years, and finally underwent carcinomatous degeneration after two or three operations on the gland.

Goitre.—Poncet (82, June 13) presents the *geographical distribution* of goitre in France. The disease is most prevalent in the regions of the Alps, the Pyrenees, the Central Plateau, the Jura, and the Vosges. The total area in which the disease is endemic seems to have diminished in the last fifty years, and undoubtedly goitre has decreased in France as a whole.

J. G. Adami (118, —) gives a full review of the question of the cause of goitre and alludes to the evidences of its infective origin. Of a regiment of soldiers whose quarters were changed to a goitrous region, 1,009 became affected.

A case of severe dyspnea due to *retro-sternal goitre* is reported by E. Sandelin (abst. 68, Sept. 29), in which tracheotomy failed to relieve and strumotomy was done, with perfect relief.

Genevet (abst. 139, Aug.) reports a case of enlarged thyroid in a child three days old, with such *severe dyspnea* that operation was necessary. Cure resulted.

A. Stengel (159, June) reports a case of *acute inflammation* in a youth of 17. The general symptoms resembled those of Grave's disease. Death finally occurred from asphyxia. The severe symptoms developed quite suddenly. E. Werman (80, Feb. 5) records a case of *syphilitic* enlargement of the thyroid in a man of 24.

Treatment.—G. R. Murray (95, Aug.) has had satisfactory results from the use of *thyroid extract* in some forms of goitre in young adults. He uses 15 m. of the liquid extract or 3 grains of the dry gland two or three times daily. Exophthalmic goitre is more likely to be aggravated than helped by the treatment.

F. W. Powers (42, Aug. 25) uses *iodoform injections*. He begins with five to eight drops of a saturated iodoform-ether solution, which is injected on either side at alternate sittings. If pain is caused it is very transient. The gland hardens as it diminishes in size, and the needle must be inserted deeper. He treated twenty cases, with sixteen cures and four greatly improved.

A. G. Servoss (85, Nov., '99) gets wonderful results with *thyroid extract* in simple goitre. He finds it of no value in exophthalmic goitre.

L. R. Reznier (155, Feb. 10) obtained good results in five cases by *stable voltaization*.

Schiller (122, B. xxiv, H. 3, abst. 103, Jan.) gives a summary embracing 869 goitres, of which thirty-three were malignant, six Basedow, fourteen acute inflammation, and 816 simple goitres. Thyroidin he considers more efficacious than iodine therapeutically. Two hundred and thirty-six benign goitres were operated on by Socin's method, with a mortality of six, four deaths being from pneumonia, one from chloroform. Tetany occurred four times, twice associated with myxedema. Recurrence took place in 20 per cent. For the Basedow cases, ligation of the thyroid arteries was all that was done. The operation mortality in the malignant cases was 15 per cent. His average viability after recurrences was fifteen months.

Operation.—James Berry (9, July 7) gives his notes on seventy-two consecutive operations (extirpation or enucleation) for goitre. There were three deaths, one from chloroform. In his later cases he has depended generally on local anesthesia. He operated in five cases on account of deformity, but his later opinion is that an operation for deformity alone, unless it be an enucleation, is not justifiable. He uses dry antiseptic dressings and

gets primary union in nearly every case. His favorite methods of operation are given.

F. J. Shepherd (103, Nov., '99) presents as the advantages of the *enucleation* operation, that the technique is simple, there is no risk of myxedema, and no danger of wounding the recurrent laryngeal nerve.

In some cases where pressure is exerted by even a small gland or the part of a gland left after operation, J. Preindslberger (14, June 7) recommends *Wolfler's operation*. The gland is lifted from its bed and fastened in another position, usually higher, beneath the skin and superficial muscles. P. reports a successful case in a girl of 15.

R. G. Le Conte, Philadelphia, (7, July 7) removed a *unilateral cyst* in a man aged 28, which had existed four years, and caused pressure symptoms as it grew larger. Kocher's angular incision. Recovery the tenth day.

Exophthalmic Goitre.—This subject has been well represented in the literature the past year, and the many careful observations recorded will doubtless be of great aid toward a final settlement of the vexed question of the etiology of the disease.

Etiology.—Alfred Gordon, Philadelphia, (17, June 16-23) in an excellent paper on this subject presents an able argument for the theory that this disease is caused by *irritation of the sympathetic nerve*.

He gives three tables to show the results of treatment. The first includes forty-eight cases, by twenty-eight reporters, of treatment by medical means, thyroid extract, electricity, and drugs. The second, forty-nine cases, by forty operators, in which the thyroid gland was subjected to operation. The third, thirty-six cases, by twelve operators, in which the cervical portion of the sympathetic nerve was extirpated to a greater or less extent. The tables show the results to be very much more satisfactory in the third than in either of the others.

G. formulates the following therapeutic indications:

1. If the syndrome of the disease is the result of a mechanical pressure on the sympathetic nerve (tumor of thyroid gland,

etc.), remove the pressure, and if the symptoms persist, operate upon the sympathetic.

2. If the syndrome of the disease is the result of reflex influence on the medulla and through the last on the sympathetic nerve from some remote affection, as fibroid uterine tumors, nasal polyps, etc., remove the last, and if the symptoms persist, operate upon the sympathetic nerve.

3. If the syndrome of the disease occurs during the course of any spinal or other organic nervous disease, abstain from operation.

4. If there is no apparent cause, operate upon the sympathetic nerve.

At any rate, never operate upon the hypertrophied thyroid gland. Medical treatment can be used, if the patient refuses an operation, but never expect any permanent cure or entire removal of the symptoms.

G. Carter (95, Oct., '99), in considering the etiology of the disease, argues against an affection of the sympathetic or a toxemia from the diseased thyroid as being sufficient to explain the disease. He states his belief that the disease is a *general infection*. He quotes Grasset's findings in the blood of patients suffering from recent goitre, G. having found special parasitic elements consisting of spherical bodies, larger than red blood corpuscles, having no nucleus, but containing pigment, and having a free flagellum four times as long as a red blood-corpuscle.

A case reported by R. Cox (58, Aug., '99) *gives support to this view*. This was a severe case in a woman of 29, pulse 135, great prostration and loss of appetite. Treatment by arterial sedatives, KI., hydrochloric acid, and thyroid extract availed nothing, and the pulse increased to 140. The patient was now put on bismuth salicylate and salol, with an occasional mercurial purge. A diet of milk and eggs was adopted, with no meat, fruit, or vegetables. Absolute rest in bed was insisted on. In six weeks there was marked improvement and the pulse was reduced to 100. In four months she was up and a few months later

the exophthalmos was gone, thyroid almost normal size, and the pulse down to 82.

Dinkler (13, May 22), from an examination of two fatal cases of the disease, suggests that the microscopic appearance of the thyroid in exophthalmic goitre depends on the condition of the thymus, marked hyperplasia of the latter being found with a less atypic structure of the thyroid, and vice versa. D. considers the disease of *thyrogenic* origin.

C. Ulrich (148, May 16), after close study of forty-three cases of disease of the thyroid gland, is convinced that there is a close pathologic resemblance between Graves' disease and *myxedema*, the varying symptoms being due to difference in degree.

A writer (editorial 7, May 5) concludes that from the available evidence, exophthalmic goitre must be considered a *constitutional thyroid intoxication* expending its force especially on the sympathetic nervous system and the medulla oblongata.

A case with Graves' symptoms observed by C. R. Burr (119, Dec. 21, '99) leads him to present the question whether the nervous symptoms so often characteristic of the *climacteric* may not be due to an increased activity of the thyroid gland.

E. Boinet (68, Jan. 20) draws a comparison between diabetes and Graves' disease and holds that the latter is originally dependent on an *irritation of the nervous center*.

D. Inglis (234, Sept.) believes the disease to be due to the entrance into the blood of an *altered secretion* of the thyroid gland.

Popoff (228, Apr. 15) observed two cases of this disease in which during the early stages there were *general hemorrhages* from the mucous surfaces. As he has observed this symptom previously, he regards it as a valuable early symptom of the disease.

Acute Attack.—J. R. Arneill, Ann Arbor, (7, Oct. 6) reports a case in a woman of 33, which proceeded to a *fatal issue* in seven months from the first thyroid enlargement and four months from the beginning of the nervous symptoms. Menstruation ceased

one year before death. A. mentions and discusses the previously reported cases, which are few in number.

Armstrong (146, Feb.) had a similar *acute fatal case* in a girl of 11 years, in whom menstruation had not appeared. Only six months elapsed between the beginning and death.

In neither of these cases was an autopsy secured.

B. Breuer (14, July 12) had a case in a man of 43, which developed after an acute suppurative thyroiditis (staphylococcic), which he thinks proves the *thyroid origin* of the exophthalmos in Graves' disease. The patient died in about six months. The gland showed a diffuse hyperplasia.

J. A. Kirschi (14, July 5) reports a case in which a woman of 33, who had not fully recovered strength after a typhoid attack seven months before, suddenly developed symptoms of exophthalmic goitre after being frightened. Within two months these symptoms abated and *myxedema* of the face and hands occurred. The goitre became fibrous, the uterus atrophied, and the skin became dry.

Complication.—M. Faure (82, Sept. 23, '99) gives the full history of a very interesting case of this disease. A woman aged 32 began to show symptoms and in six years presented a complete case of exophthalmic goitre. The most prominent symptoms throughout were cardiac, increasing rapidity and irregularity of beat, hypertrophy and dilatation, and finally insufficiency.

During the eighth year there was general improvement. Then for a period of three years, while all the Graves' symptoms persisted, myxedema manifested itself, and at the close of this period, all the symptoms increasing, the patient died.

The autopsy showed the thyroid pressing on the cervical sympathetic, but there were no microscopical changes in the latter.

The specially interesting feature of this case was the *coexistence of exophthalmic goitre and myxedema* for at least two years. The entire report is well worth reading.

Treatment.—M. E. Valude, Paris, (4, No. 3, trans. by W. H. Jefferys) alluding to the efficacy and at the same time the dan-

gers of treatment by resection of the cervical sympathetic, offers an argument for treatment by *galvanic currents* of high intensity. The negative pole is applied to the nape of the neck by an ordinary electrode of 300 square centimetres. The positive pole connected with a tin electrode 8 to 10 cm. long and 2 to 3 cm. wide, covered with tinder and chamois skin and a layer of cotton wool, is applied parallel to the anterior border of the sterno-mastoid so as to lie in the groove from the angle of the jaw to the episternal notch. A current of 15 to 20 mp. with an e m force of 20 volts is applied from fifteen to twenty minutes. In connection with this treatment, strong faradization of the orbicularis palpebrarum for two minutes and of the praecordial region for five minutes is used. He gives one illustrative case in which six months' treatment relieved the exophthalmos almost completely, but only ameliorated the other symptoms.

Stewart (161, May) puts *rest first* and then *attention to the circulation*. Digitalis and strophanthus, five minims three to six times a day constitute the chief medical treatment. Ergot, belladonna, spartein and carbozolate of ammonia are sometimes useful. The ice-bag over the heart or lower part of the neck will reduce the pulse rate. Thyroid extract has been unsatisfactory and S. thinks surgery offers the most for the future.

C. M. Allen (8, Aug. 26, '99) takes the view that the disease is dependent on the thyroid gland and after a consideration of recent views on the functions of the liver he suggests the use of *bile* by mouth, hypodermically, and intrathyroideal injection. He is able to report some cases in support of this line of treatment.

H. J. Vetlesen (222, B. 37, H. 5 u. 6) thinks the disease may be due to a primary affection of the nervous system, followed by excess or perversion of the thyroid secretion. *Iodin* has given results, but he thinks it should be used only in the ointment. He has not used thyroid preparations. Operation is reserved for cases of great suffering unrelieved by medical treatment.

Bartholow (17, Apr. 28) finds the most useful single remedy in these cases to be *galvano-faradism*, using the descending stable current of a strength of five to ten milliamperes. In car-

diac cases he likes spartein sulphate and picrotoxin, sometimes combined with sulphates of iron and manganese.

R. Spartein Sulph.....	gr. I
Picrotoxin	gr. I-60
Mang. Sulph. exsic.....	gr. I
Fer. Sulph. exsic.....	gr. I

Make one pill. Take one three times daily. In the more chronic cases he uses 10 grains sodium iodid, 6 grains sodium bromid and 1-30 grain sodium arsenate in a teaspoonful of water three times daily. He condemns the present hygienic management; the diet should be more liberal, systematic exercise short of exhaustion and light mental occupation are commendable. He questions the general efficacy of the "rest cure."

Pitres (68, Sept. 23, '99) treated twelve cases by injection of an *ether-iodoform* solution into the gland, 1 cc. about every eight days. Pain is severe, but lasts not more than twelve minutes. Excellent results in six cases, and no accidents in 120 injections.

Zabludowsky (232, Nov., '99) claims much improvement but no cures from massage of the thyroid. The gland is squeezed horizontally and vertically with both hands. Tapping on the spine and on points where the nerves are accessible in the neck is also done. Paulesco (141, Oct., '99) gives two powders of quinine of 15 grains each at bedtime, fifteen minutes apart. M. P. Creel (274, Dec., '99) treated ten cases with *galvanism and iodin*. Eight were cured.

M. F. Coomes (110, Aug. 15) reports a case of this disease very greatly improved by removing the three *cervical sympathetic ganglia* on the right side. The patient was a negro woman of 29, who had various other treatments without avail for two years.

G. Rembach (abst. 7, May 19) reviews the results of eighteen *operated cases*, resection being done in thirteen with success. The arteries were ligated in five. No constant pathologic anatomic alteration, specific for the disease, could be discovered.

P. Courmont (257, July, '99) obtained marked improvement in a case by *stretching the sympathetic*.

Bonardi (295, Feb.), from theoretical considerations and from study of reports of surgical treatment, declares himself firmly *opposed to operative treatment* of these cases. According to his experience, electrical treatment will cure some and improve all.

THYMUS.

Friedjung (231, June 20; July 5; abst. 33, Oct.) writes very exhaustively on the *status lymphaticus* and "thymic death." About the middle of the century spasm of the glottis was frequently called "thymic asthma." In 1858 Friedeben so far succeeded in convincing the profession that the thymus had nothing to do with these cases that the term was dropped. From 1878 on, various investigators, including Flesch, Virchow, Jacobi, and Somma, made reports showing the possibility of death resulting from the enlarged thymus, but it is still conceded that as a rule there is no association between enlargement of the thymus and laryngeal spasm. In deaths from glottic spasm the thymus is usually found enlarged, but many times not sufficiently to compress the trachea. Numerous instances of thymic death in connection with narcosis are upon record. Such death may occur at any stage of narcosis, even after the anesthesia has passed off. If we have reason to suspect enlarged thymus, anesthetics must be avoided. While there is dispute as to the possibility of recognizing enlarged thymus during life, the *status lymphaticus* with which it is usually associated is readily diagnosed. It must be distinguished, however, from actual scrofulosis. The abstract from which this is taken is quite full and well worth perusal.

L. M. Bonnet (271, Sept. 9-23, '99) also discusses this subject quite exhaustively. He makes *two classes* of enlarged thymus—congenital, and the acquired rapid increase of the gland. In the former class, breathing may be prevented at birth. The gland may gradually decrease in size after birth and cure result,

or a progressive dyspnea may lead to death. Death may be sudden from accidental causes, narcosis, intoxication, etc. Sudden death very often occurs in the second variety, especially after operations.

H. D. Rolleston (121, Nov., '99), in addition to such conclusions as recorded above, believes that the enlarged thymus can be a direct cause of *heart weakness* by pressure on the vagus. We must, however, recognize that an enlarged thymus may also be found in death from other causes—for instance, laryngismus.

M. Lange (123, July, '99) describes a case in which a four-months' infant died of *glottic spasm*, the autopsy revealing a scabbard-like compression of the trachea by an enlarged thymus gland.

ASTHMA.

R. B. Faulkner (17, June 2) defines asthma as a condition of spasm of the bronchial tubes with bronchial and peri-bronchial hyperemia, accompanied by rales upon both inspiration and expiration, with great difficulty in breathing. He also recognizes a second form due to affection of the par vagum without apparent bronchial lesion or any lesion anywhere beyond the par vagum. He would rule out all other forms of so-called asthma from the definition as tending to obscure the subject. He rejects nasal affection as the cause of any considerable proportion of cases. He goes into the etiology, pathology and diagnosis quite fully and presents a line of treatment. Counter-irritation over the par vagum he has found efficacious in many cases. He advises in severe cases the local use of strychnin by intralaryngotracheo-bronchial injections, from 1-50 to 1-20 grain, not oftener than twice in twenty-four hours. Systematic exercises to develop the muscles of respiration are given, the exercises being taken without apparatus.

S. Solis-Cohen (7, May 12) considers asthma "not a definite nosologic entity, but a morbid condition symptomatic in its nature and associated with various and varying pathologic proc-

esses and physical states." He believes that in certain cases the immediate mechanism of the paroxysm is bronchial spasm, often vascular as well as muscular. In other cases he thinks the paroxysm due to irregular turgescence of the bronchial mucosa, this turgescence in some cases being preceded, accompanied, or succeeded by inflammatory or subinflammatory conditions associated with exudation into the bronchioles. In some cases the gouty or rheumatic diathesis may be a causative factor. Occasionally nasal abnormalities may be the exciting cause. After a general discussion of the conditions existing in asthma, he takes up the consideration of the use of adrenal substance, not as "a treatment for asthma," but as a measure "applicable in the treatment of certain cases" of that affection.

E. Kingscote (16, Oct.) says that we must look for the cause of spasmodic asthma in some tissue or tissues supplied by the vagi and sympathetic nervous system or in a lesion of the nerves themselves, which means, of course, that the cause may be located in almost any part of the body. Three factors are, however, almost constant in cases of asthma of long standing; these are cardiac dilatation, acute vesicular emphysema, and chronic congestion of the liver. These conditions must be cured, as they may continue to cause asthma after the original causes have disappeared.

As to treatment, discover if possible the original cause of the disease in whatever part of the body it may be located, and remove this if possible. Then the cardiac dilatation is to be treated by the Schott method and the emphysema by breathing exercises to develop the upper part of the thorax. Appropriate general treatment is given. K. claims to have cured 90 per cent of his asthma cases with this treatment, including hay fever.

A. Fraenkel (18, Apr. 26) states that the anatomical findings in the lumen of the bronchi in bronchial asthma are not always the same; in all, however, there is an *abundant epithelial desquamation*.

M. Chisholm (57, Jan.) says "asthma is caused by a diseased condition of any one of the parts entering into the *reflex arc* of the respiratory system." With this impressionable condition the

immediate causes determining spasm after the habit is confirmed may be central or peripheral. Ammonium iodid or syrup of hydriodic acid given at bedtime for months is the author's remedy. Arsenic is also used for its effects on the nerve cells.

Riegel (18, No. 41, '99), proceeding on the theory that the asthmatic attack is dependent on *vagus irritation*, causing spasm of the bronchial muscles, recommends atropin 0.5-1 mg. hypodermically to abort the attack.

W. B. Bell (95, Oct., '99) does not think that much progress has been made in recent years in the etiology of asthma. He considers asthma a *symptom only*, and not a disease.

W. C. Glasgow, St. Louis, (6, Aug. 25) discusses laryngitis as a provoking cause of the asthmatic paroxysm, and describes four cases illustrating various types which were cured by the local application of carbolated iodine to the larynx in connection with the usual constitutional treatment.

HAY FEVER.

R. A. Bate (110, Aug. 1) considers hay fever as a *form of arthritism*, while the exciting causes include local irritations, sudden emotions and mental impressions. The alkalinity of the blood should be diminished for palliation of the attack.

John Dunn (53, Sept. 22; Dec. 8, '99) considers *uric acid irritation* of the intranasal tissues and the bronchial mucous membrane as the usual cause of asthma and hay fever, while the often accompanying nasal polyps are a direct consequence of the irritation of the ethmoid region by the same irritant.

Adler (232, July), in order to explain hay fever and the non-infectious catarrhs of spring and fall, proposes the theory that the membranous lining of the upper air-passages has a *different coat for summer and winter*. Rapid seasonal change causes this coat to be thrown off too suddenly and catarrh results. Some persons cannot produce a proper epithelial coat for winter, this explaining winter catarrh of elderly people. In others the sum-

mer coat is at fault and the light, odors and dust of the season produce hay fever and like disorders. Treatment is directed to this epithelial defect.

Treatment.—The latest development in the therapy of this disease is along the line of *immunization*. H. H. Curtis (70, July 7) relates his experiments and asks for the corroborative observations of others. As the ragweed pollen is the most usual immediate source of irritation, C. had prepared a tincture of this weed and administered it to the sufferers just before the time for the annual attack. His results were favorable, but the number of cases too few to draw accurate conclusions. On his recommendation the remedy has been quite extensively used the past season, and no doubt accurate reports will soon be available.

E. B. Gleason, Philadelphia, (32, Aug.) indorses the *acid treatment* of these cases as suggested by Bishop. For three years he has given his cases three to five drops of the freshly prepared nitro-muriatic acid four times daily and has had absolute failure in but one case, the others deriving more or less relief. Omission of a single dose, however, resulted in a return of symptoms. G. also looks for the hypersensitive areas on the nasal mucous membrane and cauterizes lightly with the electric cautery (preferably between seasons), or a 10 per cent solution of chromic acid.

S. S. Bishop (1, Oct.) calls attention to the fact that while the acid treatment of the acute attack as recommended by him is very satisfactory for immediate relief, it must be remembered that the *uric acid must be eliminated* from the system and not continuously precipitated from the blood by acids. He uses lithia in the form of the effervescing tablets, 15 to 25 grains daily, with plenty of water, as an eliminant preceding and following the time for the acute attack.

Müller, Vienna, (7, Mar. 17) uses the following in chronic hay fever:

R.	Menthol	gr. xlv.	3
	Resorcin	gr. xlv.	3
	Alcohol	dr. iijss.	14

After applying a solution of silver nitrate to the nasal mucous membrane with a brush, and irrigating with seven or eight quarts of water, he applies the above solution. He also gives an alkaline mineral water.

Somers (85, June) discusses the properties of the aqueous extract of *suprarenal gland*. He recommends the following solution in hay fever:

R. Adrenal	20 grains
Phenic acid	2 grains
Eucaïn B.....	5 grains
Distilled water	2 drams
Macerate ten minutes; filter.	

This solution keeps for months and remains active.

B. Douglas (6, Sept. 2, '99) and E. W. Wright (68, Sept. 16, '99) recommend suprarenal extract, the former internally.

A. E. Abrams, Hartford, (3, May) thinks that while a diseased condition of the nasal mucous membrane and an exciting cause are two of the etiologic factors in hay fever, yet no case of hay fever occurs except the individual has a *neurotic* habit. For treatment, A. depends on painstaking attention to details in regard to the patient's habits, idiosyncrasies, diet, etc., and the usual remedies. He likes the effect of the suprarenal extract.

Hollopeter (32, June) believes fully in the local origin of the disease. Treats by *daily thorough cleansing* with Dobell spray, and boric acid on applicators, followed by suprarenal solution and an oil spray.

K. Grube (8, July 7) calls attention to gout as an underlying cause of this disease and cites several cases illustrating its cure by the waters of Neuenahr, Germany.

INFLUENZA.

F. Phillips (9, Nov. 1, '99) calls attention to a sign of influenza which he considers pathognomonic. This is a congestion of the greater part or whole of the *faucial arch*, the distinguishing

feature being a narrow patch of superficial ulceration on the sides of both anterior pillars of the fauces and resulting from the desquamation of the epithelium during the acute attack. In the chronic stage, which is the stage in which it is usually observed, there is a granular appearance, which may persist for months and years without the patient suspecting its presence, there being no pain unless infection occurs. During acute exacerbations from infection the mouth temperature may be considerably higher than that of other parts of the body. P. bases his conclusions on the study of 500 cases, and states that the peculiar condition described follows in even the mild forms of the disease.

N. Filatow (68, Nov. 25, '99) describes certain forms of influenza lasting from six to twelve weeks and longer. The attack is severe, although the fever is usually not high. It is to be distinguished from malaria, typhoid and miliary tuberculosis.

Mabel J. Austin (272, Oct., '99) reports three fatal cases of *endocarditis* apparently due to the influenza bacillus.

TUBERCULOSIS.

T. F. Harrington, Lowell, (17, Apr. 28) offers as a new sign for the early diagnosis of tuberculosis, a widely dilated state of both pupils, stating that he has often observed that patients convalescent from acute diseases and showing this sign are almost sure to develop tuberculosis.

E. Bendix (18, Apr. 5) applied the *agglutination* test in thirty-six cases of tuberculosis and obtained the reaction in all but two, both of the latter being advanced cases of the disease. Various dilutions were used, in one case as high as 1:50.

H. Lorenz (212, Mar.), after the use of the *diazo test* in fifty-four consumptives applying for sanitarium treatment, states that the only deaths that occurred were among those who presented the diazo reaction. Among those not showing the reaction, all improved but three. From his investigations L. concludes that the diazo reaction is a valuable aid to prognosis.

W. Naegelsbach (13, Oct. 10, 17, '99) agrees with Lorenz as to the *bad prognosis* in tuberculous cases showing the diazo-reaction. M. Michaelis (80, Mar. 26) comes to the same conclusion. Of 111 cases showing the reaction, eighty died; of fifty-six not showing it, only three died. The presence of the reaction contraindicates treatment with tuberculin and sending the patient away from home.

A. Gehrmann, Chicago, (137, Aug.) found tubercle bacilli in the milk in 39 per cent of cows suffering from tuberculosis. He states that by searching the concentrated milk from cows with tuberculosis, but with sound udders, the tubercle bacillus will be found in about 35 per cent. The bacilli are found with about equal frequency in the sediment and in the cream.

John A. Robison (7, Jan. 27) discusses the question of the transmissibility of bovine tuberculosis to the human. After quoting various writers, he concludes that it is very questionable if the disease is contracted by man from the lower animals, and suggests the urgent need of further accurate investigations to decide the point.

Treatment.—P. Paquin, Asheville, N. C., (6, Feb. 10) reports twenty-nine cases of active tubercular disease, principally of the lungs, in which treatment with *immunized horse serum* had resulted in cure lasting to the time of the report, two to four years. Many of the cases were far advanced.

G. A. Evans, Brooklyn, (6, Feb. 17), in addition to the usual active treatment of pulmonary tuberculosis, uses a 25 to 30 per cent solution of carbolic acid in equal parts of glycerin and water. This is used as a fine spray for thirty minutes daily, under a pressure of about 1-25 of an atmosphere.

J. E. Stubbett (70, Aug. 18) gives the further history of patients previously reported apparently cured by serum treatment. His conclusion is that in antitubercle serum we have simply another auxiliary to climatic, hygienic and dietetic treatment, but one which seems to stand ahead of all other recognized agents in incipient cases in a large majority of instances.

R. E. Klebs (80, Dec. 11, '99) insists that the specific treat-

ment of tuberculosis is essential. He uses *tuberculocidin*. J. Petruschky (80, Dec. 25, '99) thinks a permanent cure can be achieved with *tuberculin* by giving two courses of treatment; the treatment is without value in cases of secondary infection, however, and should not be used in the very feeble. He gives full histories of twenty-two cases, four of which were advanced, and all of which were cured with Koch's tuberculin.

E. Maragliano (80, Dec. 4, '99), in his experiments in serum therapy in tuberculosis, produces an antitoxin which is harmless and which counteracts the tuberculous toxin, but has no influence on the bacillus.

H. P. Loomis (68, Sept. 29) has tried the *nitrogen gas* treatment in eighteen cases, and concludes that intrapleural injection of nitrogen gas will have a permanent place in the treatment of lung tuberculosis. In only two cases was there apparent arrest of disease, but there was some gain in all. His most brilliant results were in the cases of hemorrhage, which were checked at once in the eight cases tried.

Mendel (43, Sept. 9, '99) lessens the cough and expectoration very much by *intratracheal injections*. He uses essence of thyme 1 dr., ess. of eucalyptus 1 dr., ess. of cinnamon 1 dr., sterilized olive oil 3 ounces; injecting about 3 ccm. once daily. The patient experiences a pleasant sensation of heat.

Pollak (14, No. 3) finds no good effects from the use of Duotal, the cough, expectoration, breathing, and general condition of the patient showing no improvement.

E. L. Trudeau (68, May 5) sums up the treatment in the words, rest, food, restoratives.

A very valuable collection of papers on tuberculosis will be found in The Journal of the American Medical Association of Oct. 20, 1900, and in The Philadelphia Medical Journal of Dec. 1.

Fraenkel (223, Feb. 6) does not think Landerer's statistics of results from the use of *cinnamic acid* are better than those of other methods. From personal experimentation on ten cases, F. could see *little good effect* from the drug. He finds it useless as an inhalation, internal administration is of doubtful utility,

while intravenous injection is excessively painful and subcutaneous injection equally so unless cocain be first used.

T. M. Murray, Washington, (2, June) has had good results in the way of diminished cough and expectoration, lower temperature and better general condition from the use of *tracheal injections* of thyme and eucalyptus oil in olive oil.

A. Treupel (13, June 12) gives a very full resumé of the present status of our knowledge of tuberculosis. He objects to respiratory gymnastics in recent cases of pulmonary tuberculosis.

A good synopsis of the present treatment of pulmonary tuberculosis may be found in Whyte's article (41, July) abstracted quite fully in The Therapeutic Gazette for October, 1900.

In a very extended paper, O. Chiari (80, Nos. 45, 46, 47, '99; abst. 1, Apr.) considers the subject of *tuberculosis of the upper respiratory tract*. Of 695 cases in which this region (nose, naso-pharynx, mouth, pharynx, larynx) was affected, 635 were laryngeal—about 90 per cent. From various hospital reports he deduces that in a little less than 30 per cent of the cases of pulmonary tuberculosis the tract in question is affected.

The modes of infection are:

1. From inspired air.
2. From the sputum.
3. Through the blood.
4. Through the lymph.
5. From food, this mode, of course, acting only in those regions with which the food comes in contact.

Tuberculosis of the pharynx and nose is very rare, the naso-pharynx not so rare, by reason of the pharyngeal tonsil and the very common post-nasal catarrh.

The nasal disease occurs in three forms:

1. An ozena-like inflammation, where the discharge seems to be filled with bacilli.
2. Ulcerations, usually occurring on the anterior portion of the septum.
3. Tubercular tumors.

Tubercular tumors of the brain and its membranes seem to originate sometimes from the nasal affection.

Tuberculosis of the tonsils is not so rare as formerly thought, the primary occurring in isolated nodules, the secondary form as superficial ulcers, the tissues rapidly degenerating. Mendelsohn, after exhaustive study of the question, believes the tonsils to afford no protection against the bacilli, but rather to favor their entrance into the general system.

Schech is quoted as saying that while nearly all cases of laryngeal tuberculosis are secondary, yet a small per cent is undoubtedly primary. C. thinks that while the primary disease is possible, it is very difficult to prove its existence absolutely. Infection occurs most frequently from the sputum.

In the matter of treatment the following suggestions are made:

1. Strengthen weakly children, because anemia favors the development of the bacillus.
2. Cure catarrhs.
3. Extirpate all isolated tubercular foci, lupus, tuberculous tonsils, faucial and pharyngeal.

The question of *lupus* in this tract is also considered. The nasal mucous membrane is often the seat of the primary disease, while the pharynx, naso-pharynx, and larynx also show primary lupus, although much less frequently than the nose. The most important predisposing etiologic factor is the so-called scrofulous habit.

DIPHTHERIA.

An examination of more than 200 articles on the subject of diphtheria and its treatment during the past year shows the subject to stand about as a year ago. Much clinical experience has been recorded and some painstaking laboratory experiments have been undertaken. For the present the antitoxin treatment has very justly overshadowed nearly every other treatment, and little has been offered in other lines. Nearly every article is laudatory of antitoxin, only a very few discordant voices having been

raised. In the cases in which the Klebs-Loeffler bacillus is the active agent, antitoxin is a fairly perfect remedy; there remains, however, quite a group of cases in which this serum is useless and for which there is yet to be sought a remedy as effective as is the serum in its proper field.

Bacteriology.—Kober (abst. 139, July) contends that the ordinarily accepted statement that the Loeffler bacillus is found in the mouths of 18 per cent of healthy persons in contact with diphtheria patients is incorrect; he places the percentage at 8. The ordinarily accepted percentage in persons not in contact with diphtheria patients is .83.

F. P. Denny (119, Nov. 22) found virulent diphtheria bacilli in the throat of only one out of 235 healthy persons who were not known to have been exposed to diphtheria.

H. W. Hill (288, Jan.) discusses the finding of branching forms of the diphtheria bacillus and raises the question whether this germ may not eventually have to be removed entirely from the bacillus class and placed as a degenerate streptothrix.

J. Glover (81, Jan.-Feb., '99) adds further evidence of the benign character of the short bacillus of Loeffler, having found it in seven out of eleven cases of the membranous angina so often seen following removal of the tonsils. There were no serious symptoms and no history of diphtheritic contagion in the cases.

Miscellaneous.—Raczynski (abst. 2, July) considers the question of *differential diagnosis* of ulcerous angina and diphtheria. While very similar at first, the absence of general symptoms later, the absence of the K.-L. bacillus and presence of the specific spirillum are sufficient to distinguish the ulcerous angina.

W. Ewart and H. B. Roderick (8, Dec. 30, '99) report a case of laryngeal diphtheria in a girl of five years, in which death occurred apparently as the result of extensive mediastinal emphysema. Antitoxin was used and tracheotomy done.

E. E. Ware (8, Feb. 10) reports a case in which the diphtheritic patch was located on the *vulva*, there being none in the throat, and yet the paralysis ensuing manifested itself as usual in the *palatal muscles*.

L. Cobbett (8, Aug. 25) reports on a case of *diphtheria in a pony*, a child having apparently contracted the disease from the animal. The local symptoms in the pony were those of diphtheria, and a bacillus obtained resembled the K.-L. bacillus and answered to every test of the latter. The case conclusively proves that the horse is liable to diphtheria and throws light on the presence of antitoxin in the blood of apparently normal horses. It is suggested that the disease is not uncommon in these animals.

F. L. Stillman (180, Dec., '99) reports a case of *membranous angina* in a man of 22, in which the membrane covered tonsil, cheek, and gum, and was removed with difficulty. No K.-L. bacilli, but abundant streptococci on one side and staphylococci on the other. Duration of disease, three weeks, no sequelae.

Treatment.—O. A. Fliesburg (133, Vol. 19, No. 22) treated thirty-seven cases of membranous croup with thirty-five recoveries. The treatment used was apomorphin gr. 1-100 to 1-40, calomel gr. 1, sod. bicarb. gr. 2, given dry on the tongue every hour. Thirteen other cases were instrumental, with three recoveries.

Weisbecker (13, No. 39, '99) claims excellent results in diphtheria from the use of *serum of patients convalescent* from the disease. One injection only is used, the quantity varying from 1 to 2½ drams, according to the age of the child.

ANTITOXIN.

The articles of the year show a general tendency to increase the dosage and the safety of serum injection is shown by the absence of any reports of serious results.

W. H. Park (Jacobi's Festschrift) gives the results of his researches as to the antitoxic principle in horse's serum. He concludes that the globulin contains the antitoxin. Experiments and clinical experience proved this but also showed that the antitoxic globulin contains the greater part of those substances which cause the more or less deleterious effects of the blood-serum.

Arloing (abst. 32, Aug.) after an extended study of the physiological action of normal horse serum, antitoxic serum and diphtheria toxin, concludes that the serum of the normal horse and that of the horse immunized against diphtheria have toxic properties, being equally so, but the toxicity is not constant. Some seventeen other conclusions of the author are given in the abstract quoted.

A very valuable article by W. H. Park (7, Apr. 14) on the use of antitoxin bears out the practically universal belief in the utility of the remedy. He uses 1,000 units in mild cases, if seen early; 2,000 to 4,000 units in severe cases seen early, and varies between these limits according to indications. The severity of the disease rather than the size of the patient governs the size of the dose, although under one year he would not give more than 3,000 units, and under six months not more than 2,000 units. In all cases the doses are repeated at twelve hour intervals if improvement is tardy.

J. Mullen (16, Apr.) advocates large doses, although not quite willing to subscribe to the 8,000 or 12,000 units as used in Europe. The article is a good statement of the present opinion in regard to "The Antitoxic and Surgical Treatment of Diphtheritic Laryngitis."

B. R. Shurly (7, May 19) draws the usual conclusions from the use of antitoxin in connection with intubation. In 100 intubations in which antitoxin had been used there were sixty-nine recoveries. Mortality, under three years, 49 per cent; over three years, 19 per cent. The same writer makes a report (16, Dec.) on a second series of 100 cases of intubation in which antitoxin was used. In this series eighty recovered and twenty died. A total of 210,700 units of antitoxin was used as compared with 167,350 units in the first series. He attributes the better results in the second series to the earlier use of larger doses of antitoxin. He believes in steam inhalations and gives calomel internally.

In the Boston Hospital (17, Sept. 9, '99) antitoxin is used successfully in large doses. In a 9-year-old boy, received in an apparently moribund condition, 12,000 units daily were given for

four days with ultimate recovery. The amount was given in broken doses at four-hour intervals.

Intravenous injection of antitoxin in especially severe cases has been recommended. Gagnon (147, Dec., '99.)

While the general tendency is to increase the dosage of antitoxin, J. H. Musser (159, Mar.) advocates smaller doses repeated often. Up to six or eight years he gives an initial dose of 500 units to be repeated every six hours until improvement is decisive. For children over eight years 1,000 units are given in the same manner.

J. E. Herman, Brooklyn, (68, Jan. 20) is still compiling statistics to prove the inutility of the antitoxin treatment in diphtheria.

WHOOPIING COUGH.

G. Arnheim (68, Sept. 1) corroborates the finding of Czaplewski and Hensel in regard to the *specific bacillus* of whooping cough. His studies included forty-four cases and three autopsies. The bacilli occur singly and in chains.

N. R. Norton, New York, (121, April) got positive results in one series of cases of whooping cough treated by *rectal injections of carbonic acid gas*, the paroxysms being much diminished in number and severity. In another series, however, the results were negative. Three children with whooping cough who contracted laryngeal diphtheria and required intubation were so greatly benefited as regards the cough paroxysms, by the procedure, that the suggestion of O'Dwyer that severe cases of whooping cough should be intubated (with hard rubber tubes) is worthy of careful consideration.

C. G. Kerley, New York, (121, April) made trials of all the usual remedies for whooping cough in a series of 752 cases in private and hospital practice. Most of them seemed to exercise very little influence on the disease. Of those which had a good effect, antipyrin and bromides were the best. To a child of eight months, $\frac{1}{2}$ grain of antipyrin and 2 grains sodium bromide were

given every two hours. At fifteen months, 1 grain of antipyrin and $2\frac{1}{2}$ grains of sodium bromide. At two and one-half to four years, 2 grains antipyrin and three grains of the bromide. As adjuncts the use of the steam spray and fresh air is emphasized.

In the discussion following these two papers (Sec. on Pediatrics, N. Y. Acad. of Med.) most of the speakers favored antipyrin, and some who had compared it with heroin found the former the more effective.

F. Huber (121, June) favors the use of codeine to the point of slight narcosis in severe cases during the few days that the disease is at its height.

H. Coggeshall, New York, (70, Mar. 31) suggests a treatment which gave marked results in four cases. In children three years old or over, the anterior part of the nasal mucous membrane was cocaineized and then an application of 2 to 4 per cent nitrate of silver made to the nose and naso-pharynx. This is followed by a mild antiseptic alkaline spray.

Feer (abst. 2, June) has had excellent results with bromoform; the drug must be fresh.

M. Heim (80, Dec. 11, '99) recommends antitussin in this disease. It is an ointment; difluordiphenyl, 5 parts; vaselin, 10 parts; lanolin, 85 parts. H. used it in sixteen cases with good results.

F. T. Wright, Calumet, Mich., (7, Oct. 6) tried the remedy in six cases with excellent results. The back, chest, or abdomen is washed and a quantity of the ointment, varying from dr. $\frac{1}{2}$ in a child of one year to dr. 1 in a child of five years, is thoroughly rubbed in. This amount is used daily for one week and then every second day until cure is accomplished. Improvement begins at once.

AORTIC ANEURISM.

M. Schmidt (126, May, '99) has diagnosed fifty-four cases of aortic aneurism in the past eleven years, in twenty-one of which diagnosis was confirmed on autopsy, and the sudden death of a

majority of the others was confirmatory of the diagnosis. Eight cases were cured. Thirty-eight cases were hoarse and had recurrent paralysis. Thirty-one cases were under observation for some time, and of these nineteen showed the tracheal tug.

J. N. Hall, Denver, (123, Jan.) believes that the reason the *tracheal "tug"* has not been accorded a higher value in the diagnosis of aneurism of the aorta is that in statistics dealing with the point there has been a confusion of the tug sometimes occurring during inspiration, the normal aortic pulsation transmitted to the trachea through a solid tumor, with the true tracheal tugging, due to the diastolic shock, conveyed through the aneurism to the trachea.

Cases are reported by J. A. Kenefick (1, April) in a man infected with syphilis twenty-five years before. G. P. Head (17, Jan. 13) aneurism of aorta in a woman of 60, causing typical paralysis of the left recurrent.

MISCELLANEOUS.

Malignant Tumors.—C. Ziem (19, No. 3, abst. 4, No. 3) thinks the influence of heredity in malignant growths is much overestimated, while the abuse of alcohol and tobacco, mechanical irritation and traumatism only act where the personal predisposition is present. The coexistence of these growths with suppuration in the upper respiratory tract and the ear suggests to the author an irritation due to infection from the pus. With this in view he insists on the extreme importance of accurate investigation as to the coexistence of the two conditions in the localities mentioned. He believes a careful study of sinus disease will throw much light on the pathology of malignant growths in their vicinity. Infection from impure drinking water or inhalation may play an etiological part. Damp, swampy soil favors the development of benign and malignant growths and Z. considers the transformation of one into the other to be beyond doubt. He explains the local recurrence of malignant tumors on the assump-

tion that some chronic febrile process, malaria, purulent untreated catarrh, etc., was present but overlooked at the time of operation. He thinks that treatment of these conditions and a general management of the patient, with perhaps change of climate, might prevent many recurrences.

Sarcoma of Sheath of Carotid.—S. Spicer and S. Collier (8, Aug. 5, '99) report a case of hoarseness and dyspnea in a man of 59 with a lump in his neck, manipulation of which at once produced coughing. The left cord was seen to be motionless in the cadaveric position. The tumor with the involved structures was successfully removed, the patient recovering. The internal jugular vein, the carotid and the vagus nerve were divided.

Tumor of Carotid Gland.—Heinleth (13, June 26) records a case of *perithelioma* of the carotid gland in a woman of 60, the origin of the tumor dating back to the extraction of a tooth and fracture of the alveolus forty years before. H. finds six other cases reported. These tumors lie at the bifurcation of the carotid and are rather immobile and pulsate. The carotid was preserved in the author's case, but in all the others it was removed with the tumor.

Cervical Adenitis.—C. L. Schleich (150, Oct., '99) believes that radical extirpation of these glands in children is too often done; the simpler operation of *enucleation* or even *simple incision* being sufficient in many cases. In cheesy hyperplasia, when constitutional and local treatment fails to relieve, enucleation should be done. Simple abscess requires incision and tamponing. Multiple abscesses require careful extirpation of the collections, but it is not necessary to remove the capsule. Only in tumor-like swelling is radical extirpation called for.

Vago-Accessory Paralysis.—v. Zander (5 B. 9 H. 3, '99) reports a case of vago-accessory paralysis, the symptoms being as follows: On the right side: Motor paralysis of the soft palate. Paralysis of all the laryngeal muscles. Paralysis of the sternocleido-mastoid. Paralysis of a portion of the trapezius. Sen-

sory disturbances of the pharynx. Sensory disturbances of the larynx.

On the left side: Paralysis of part of the laryngeal muscles. Sensory disturbances in soft palate. Sensory disturbances in the larynx. There were also rapid pulse, rapid breathing and gastric symptoms.

Hiccough.—Noir (155, Jan. 6) describes the various methods of treating obstinate hiccough. He prefers Laborde's method, vigorous traction of the tongue. He cites two severe cases that were promptly relieved by this method after many others had failed. Traction was continued one minute in one case and two minutes in the other.

Parotitis.—F. C. Ewing (3, Aug.) describes a case of recurring parotitis which had persisted ten years in an otherwise healthy boy of eleven. There was no lymphatic enlargement.

H. J. Walcott (123, Dec., '99) reports a case of parotitis in a man of 99½ years with a fatal issue. The disease was limited to the right side.

Glanders.—Zandy (18, May 24) reports a case of glanders in a man of 25. Death occurred after three weeks. M. Friedrich (17, Oct. 28, '99) records a case of this disease.

Lung Tumors.—Hellendahl (222, No. 37, '99) recommends *exploratory puncture* in lung tumors, since even in cases where there is no exudate, positive diagnostic results are attained. Two cases of *sarcoma* in his own practice are cited.

Syphilis, Contagion.—Neumann, Vienna, (247, No. 1, '99) in discussion of the question of the duration of the contagiousness of syphilis states that the infectiousness depends greatly on the intensity and acuteness of the disease. After ordinary good care the disease usually becomes non-contagious after three or four years, that is, after the completion of the secondary stage. There are, however, many cases in which secondary lesions show themselves after four years, and they have even been observed as late as in the third decade of the disease, therefore the greatest care is necessary with mouth and nose instruments at all periods.

Upper Air Tract in General Diseases.—Sokolowski (abst. 2, June) finds that in nearly all cases of heart disease there are changes in the mucous membrane of the upper air passages. There was great susceptibility to colds; there was intumescence of the turbinated bodies and frequent epistaxis. In the pharynx, anemia with dilated blood-vessels was frequent. The same author (abst. 2, June) in another article considers the relation of diseases of the internal organs to disturbances of the upper air passages. In chlorosis there is anemia; in diabetes mellitus, dryness of the throat; in scrofulosis, (considered distinct from tuberculosis), hypertrophy of the glandular elements; but so-called scrofulous ulcerations are mostly tubercular or syphilitic. Gout shows enlarged uvula and similar changes.

Negro, Diseases.—E. C. Ellett, Memphis, (30, Dec., '99) states that in his experience the negro is little disposed to catarrhal inflammation, but is prone to tuberculosis and syphilis. Hypertrophied tonsils are rare, tonsillitis uncommon and adenoids do not occur in the negro. [The editor's experience is contrary to all of this except with regard to tuberculosis and syphilis. This relates to the negro as seen in Chicago.]

Life Insurance.—E. F. Ingals, Chicago, (17, May 12) in an article on this subject concludes that while usually examinations of the nose and throat would not aid the examiner, yet in a limited number of applicants a thorough examination of these parts would enable him to reject persons otherwise acceptable, who within one or two years would develop diseases very greatly shortening their expectancy; therefore, such examinations should be made whenever the hereditary or personal history, the general appearance or a quick pulse, lead the examiner to suspect the beginning of pulmonary or cardiac disease.

W. E. Casselberry (163, May) considers the "Diseases of the Throat and Nose in Relation to Life Expectancy." Among the diseases and conditions having an important bearing on the life expectancy are empyema of one or more of the nasal accessory cavities, nasal obstruction, nasal polypi, hay asthma, (though

not hay fever), syphilis of nose, repeated attacks of peritonsillar abscess, any chronic disease of the larynx, except simple laryngitis, causing dysphonia, dysphagia or dyspnea. In cases where such diseases or conditions are present the examiner should defer acceptance till curative treatment has been successfully instituted. Atrophic rhinitis, unless accompanied by sinus disease, exerts no appreciable effect upon life expectancy if ordinary cleansing treatment be maintained by the individual. The general examiner is not expected to have special skill in the diagnosis of disease of these organs any more than in others, but conditions suggesting such diseases as above named should, if necessary, be referred for special examination before acceptance or rejection.

Röntgen Ray.—John Macintyre, Glasgow, (2, July) gives an interesting resumé of the advances in X-ray work in the past three years and much interesting information in regard to improved apparatus. He also gives a number of cases illustrating work done in the domain of the nose and throat specialist. He concludes that while in the large majority of cases in this line the diagnosis may be made without the assistance of the X-ray, yet there is a small proportion of cases in which the ray is absolutely essential to accurate diagnosis.

Breathing Exercises.—Mathaei (19, No. 11) recommends continuous deep inhalations with closed mouth, terminating in holding the breath fifteen seconds or so, as of great benefit in certain throat and ear affections.

Operative Position, Chair.—T. R. French, Brooklyn, (6, Oct. 13) has used the upright position in ether operations upon the nose, throat and other portions of the head nearly a thousand times without any of the unpleasant results usually feared from this position. When sharp hemorrhage occurs, the head is held forward or sponges passed to the back of the pharynx so that with ordinary care no blood enters the larynx. He describes a new chair suitable for this class of work. It is very necessary that after anesthetizing the patient in a recumbent position the head be very slowly elevated for the operation.

The advantages claimed for the position are: 1. The very great reduction of hemorrhage. 2. Fewer ear complications by securing complete drainage of blood from the naso-pharynx, the author having had no such complication in any of these operations. 3. The great advantage of having the patient in the usual relative position to the operator.

Mirrors.—Kessel (19, No. 5) keeps his mirrors in a $\frac{1}{2}$ per cent lysol solution and wipes them dry before use, thus avoiding the necessity for heating.

Operative.—A valuable series of articles by John B. Roberts, Philadelphia, on the surgical treatment of congenital and pathologic disfigurements of the face will be found in the Philadelphia Medical Journal for May and June.

THERAPEUTICS.

Galvano-Cautery.—B. Douglass, New York, (6, May 12-26) gives the results of a microscopical examination of the nasal tissues affected by cauterization, the sections being taken immediately after, 100 hours after, 360 hours after, and after complete cicatrization. He finds no more leucocytic infiltration after the cautery than after the knife. The edema which follows a cauterization is something peculiar to the cautery, not recognizable under the microscope and not inflammatory in character. He would avoid the use of the cautery on the upper surface of the inferior turbinated body, the main body of the middle turbinate, the region of the outer nasal wall, and the ethmoid region. The base of polyps should not be cauterized as it is useless unless the periosteum be burned to a dangerous degree. He concludes that since the cautery is a more powerful destructive element than the knife, subject to the same surgical accidents as the latter, except hemorrhage, and has special dangers of its own in that the slough furnishes a nutrient pabulum for bacterial growths, its use should be avoided except by experienced operators, the cutting instrument being less dangerous in the beginner's hands. He condemns

linear or surface cauterization in the nose and prefers the method of puncture. In careful hands he believes it may accomplish its legitimate work better than can be done by cutting methods.

Douglass, in another article, (1, Jan.) discusses the use of the galvano-cautery in the nose and repeats the cautions in regard to its use which have been generally given in the past few years. He has abandoned linear cauterization and introduces the cautery point at intervals of one-fourth inch in the tissues of the inferior turbinated. On account of the peculiar edema produced, the cautery should not be used about the uvula, the facial pillars, arytenoid region or on the glosso-epiglottic fold. In the discussion following (N. Y. Acad. Med. Laryng. Sec.) O. B. Douglas, Berens, Quinlan, Curtis and Freudenthal stated that they rarely used the cautery in the nose. T. J. Harris and Myles used the cautery with great satisfaction in the treatment of the inferior turbinate. It seems to be very generally agreed that the cautery should rarely or never be used on the middle turbinate or the tissues above that, and that its use on the posterior end of the inferior turbinate is best avoided as a general thing, and that the septum should not be cauterized.

C. D. Conkey, Superior, Wis., (7, July 7) believes that objections raised against the cautery are founded on its improper use. As a matter of routine practice it should not be used in the vault of the pharynx, the middle turbinated, the soft palate and uvula, and upon the septum only when much hypertrophied or deeply congested, and then very moderately. Upon the lower turbinated, the tonsils, pharyngeal hypertrophies and follicles and at the base of the tongue it may be used with great advantage if used carefully.

S. G. Dabney, Louisville, (142, May) alludes to the present reaction against the use of the electrocautery, but states that in his experience he has seen neither persistent dryness, atrophy nor synechiae. He finds the cautery a very satisfactory means of treatment in proper nasal cases and also in the throat.

[F. D. Owsley, formerly of Chicago, did the most radical cauterization of the inferior turbinated for hypertrophic and in-

tumescent rhinitis of any operator within the knowledge of the editor. The editor has had occasion to see many of these patients several years after operation and has made it a point to investigate as to the condition of the nose. While the number thus seen has been few compared to the large number so treated by Owsley, yet in every case the person has expressed satisfaction with the results and has not complained of dryness of the nose.]

Anesthetics.—T. H. Halstead (7, Nov. 3) goes quite thoroughly into the question of the proper anesthetic in children with adenoids and decides in favor of *ether*. He believes that a thorough removal should always be done and hence rules out the operation without anesthesia and with nitrous oxid gas. Chloroform is too dangerous. Instead of this drug being safer in children than in adults, it is on the contrary more dangerous, for the reason that the lymphatic diathesis is far commoner in children than in adults. It is very important that this fact should be recognized, since chloroform is often administered for other than adenoid operations in children who have adenoids and other lymphatic enlargements. H. does not favor ethyl bromide on account of the fatalities reported from its use. Prior to giving the ether, H. gives hypodermically 1-300 to 1-100 grain of atropia, to diminish the secretion of mucus, and brushes the nasal mucous membrane very lightly with a 5 to 10 per cent solution of cocain.

J. A. Wyeth (7, Mar. 24) considers that ether is, in general, a safer anesthetic than chloroform in children.

Ethyl Bromide.—P. F. Sondern, New York, (6, June 9) discusses this anesthetic as used at the clinic of Lermoyez in Paris. The safety of this agent depends on its purity and freshness. It is to be kept in sealed colored glass and even then it is not so safe after a few weeks.

The method of use is as follows: The entire quantity, 5 to 10 grammes for a child, 10 to 20 grammes for an adult, never exceeding these quantities, is put into the anesthesia mask, the mask admitting the least possible amount of air. The sitting posture may be used. The mask is used and not reapplied. Anesthesia is obtained in from twenty to forty seconds, operation

being begun, at the longest, one minute after commencement of administration.

It is very necessary to arrest the anesthetic at the proper moment, that is when the muscles of the neck and arms are perfectly relaxed, as the pupils dilate (the eyes remain open) and the conjunctivae begin to slowly suffuse. If the anesthetic be now continued, the muscles contract and become rigid and there is danger of asphyxia, so that it will be necessary to wait for recovery, and in that case it is better to wait till another time for the second administration of the drug. Anesthesia lasts about two minutes and there are no unpleasant after effects except in adults in whom there may be an excessive excitement for some hours. The patient does not seem to be sound enough asleep to the operator accustomed to other anesthetics, but in reality he feels no pain and offers no resistance. The fatal cases recorded have been due to one of the following causes: The use of ethylene bromide instead of ethylic bromide; the use of an old solution; the use of the drug in repeated small quantities; the continuation of administration for longer than one minute; repeated administration. Never apply the mask oftener than twice at one sitting, as a death has occurred at the third application.

A. Malherbe (11, No. 26) with an experience of 3,024 anesthetics with this agent, claims that it is an ideal anesthetic for short operations. M. operates with the patient in the Rose position (head hanging over edge of table). He gives the patient a few whiffs before putting on the full amount of anesthetic, after that the method is as detailed above. The danger is chiefly to respiration, and if that seems embarrassed lift the compress or mask for a single breath. In women and children urination may occur. In longer operations M. administers the anesthetic a second or third time at intervals of five minutes, but never goes beyond a third administration. He thus gets fifteen to twenty-five minutes' anesthesia. Even after the patient begins to cry out he is absolutely insensitive for several minutes.

Nitrous Oxide and Ether.—A. H. Miller (103, Dec. '99) uses nitrous oxide and ether for anesthesia and considers it the nearest

to an ideal anesthetic that we have. The change from the gas to the ether is usually made without struggling on the part of the patient, and in 160 cases no disagreeable symptoms have been complained of by the patients. Average time to produce anesthesia, three minutes.

A very valuable article by A. S. Mansfelde on *dosage in chloroform* anesthesia appears in 7, Apr. 14. By the method here given the dosage and admixture with air becomes exact and scientific, and chloroform loses much of its terrors as an anesthetic.

Cocain.—W. Wingrave (2, Dec.) recommends a solution of cocain hydrochlorate, 5 per cent, with sodium sulphate, 2 per cent, as equally efficient for local anesthesia in the nose as a much stronger solution of cocain alone.

Suprarenal Gland.—W. H. Bates, New York, (1, Feb.) who first introduced the use of suprarenal extract to the profession, read a paper on the subject (C.) in which he reached the following conclusions: (1) Suprarenal extract is a powerful astringent without objectionable properties; (2) the solution should be freshly prepared and should not be mixed with any other substance; (3) in the treatment of diseases of the nose and throat other remedies should be used also. The above conclusions follow the use of the remedy for six years in fifteen thousand instances. He had known great benefit to be derived from the internal use of the remedy in coryza and hay fever, the tablet being dissolved in the mouth instead of swallowed. Laryngitis had been improved in the same manner.

In the discussion following, H. L. Swain confirmed conclusion (1), but had failed to get any physiological effect from the substance taken by stomach or injected hypodermically, but strong effects resulted from injection into a vein. The aqueous extract could be boiled a few minutes at a time four or five times without detriment, but further boiling destroyed its activity. From his experiments he questioned the results obtained in hay fever and thought them largely due to suggestion. B. Douglass

said that researches by Zuckerkandl had shown the existence of suprarenal glands in the epididymis and along the spermatic cord and in the mediastinum. These supernumerary glands became hypertrophied in disease of the suprarenals. D. considered that the good effects of the remedy, when taken internally, were undoubted and not due to suggestion. He considered it superior to anything else in hay fever, whether used locally or internally. T. P. Berens gets satisfactory results in nasal surgery from a 10 per cent solution of cocain and suprarenal boiled for twenty minutes. For the patient's home use he prefers the dry powder. T. R. Chambers, E. Mayer, and R. C. Myles reported severe secondary hemorrhage after the use of the substance.

F. E. Hopkins, Springfield, Mass, (1, Apr.) read a paper (C.) on the subject of secondary hemorrhage following the use of suprarenal extract. He had had a number of such cases. In the discussion following J. Wright thought he avoided the tendency to secondary hemorrhage by very carefully applying the powder to the field of operation only and not permitting it to come in contact with the nasal mucous membrane generally. W. H. Bates quoted Cleghorn, of Hartford, as stating that there was good reason for believing that the action of the extract was on the muscle directly and not on the nerve. Bates, Simpson, Coakley and Quinlan did not consider that secondary hemorrhage was any more frequent after its use. Nearly all spoke of the occasional great irritation caused by the substance, especially the powder. McKernon had not had these irritating effects since he had made use of a solution of the extract in hot camphor water. Coakley had kept an extract made with a 1 per cent solution of resorcin, for eight months with all its virtues retained.

Bates (7, Aug. 11) in another paper on this subject, states that he prepares his solution by taking 1 part of the dried gland to 10 of a saturated boric acid solution; this is held over a flame till it boils, it is then filtered and the filtrate boiled. This solution will retain its properties for months, but he reboils it daily. He warns against leaving tampons wet with the solution in the nose for several hours as infection may take place from decom-

position. He mentions the great value of the extract locally applied in acute coryza, edema of the glottis and in some cases of exophthalmic goitre.

L. Howe (70, Mar. 24) uses the following method in preparing the solution: $7\frac{1}{2}$ grains of the extract of the gland is rubbed to a paste, with water added to the amount of one ounce. This is heated for some time at 160 F., water being constantly added to keep the amount at one ounce; 15 grains of boric acid are then added. This solution will keep for weeks.

H. B. Douglass (70, Mar. 24) finds the extract a most useful remedy in *hay fever*, both internally and locally, while it will abort an ordinary acute catarrh. It is serviceable in asthma due to nasal congestion.

L. S. Somers (17, Dec. 8) from a trial of suprarenal tablets in twenty-one cases of hay fever, concludes that this substance is of *little or no use* when taken internally in this disease with or without conjoined treatment. He, however, finds it to be the most satisfactory single remedy for the condition when used locally in conjunction with measures suited to the individual case.

F. E. Hopkins (6, Aug. 25) discusses the subject of *secondary hemorrhage* following the use of suprarenal extract in operative work and cites three illustrative cases. In order to get the experience of other specialists on this point he wrote to a number with the request for their observations. J. L. Goodale, A. B. Duel, J. F. McKernon, Emil Mayer, T. M. Hardie, G. A. Leland, and L. E. White thought the tendency to secondary hemorrhage much greater after the use of the suprarenal. H. L. Swain had not had any such trouble, while J. O. Roe packed in all cases when he had reason to expect much bleeding and had had no trouble.

Hopkins calls attention to the speedier relaxation of the tissues after the combined use of cocain and suprarenal as compared with the use of suprarenal alone.

Thymus.—S. Solis-Cohen, Philadelphia, (17, Aug. 18) considers the function and therapeutic uses of this gland in a valuable article to which he appends a bibliography of thirty-six titles. He

has had success with the use of the gland in exophthalmic goitre, especially in cases not helped by adrenals.

Heroin.—M. Manges, New York, (6, Jan. 13, 20) gives an exhaustive resumé of the literature on this drug. The initial dose should not exceed 1-12 grain, while in the weak or aged 1-18 to 1-24 grain is better. Children's doses should be reckoned in the usual manner with the usual allowance for opiates. Heroin is incompatible with apomorphia, and alkalies are not to be used in solutions of the hydrochloride, otherwise the drug may be very generally combined.

The only unpleasant symptoms accompanying its use generally observed are constipation and nausea, the former occurring in a large per cent of cases, the latter in very few.

[In seventy-five cases of bronchial cough, mostly acute, the editor's results were generally very satisfactory. In two cases only, both women, were dizziness and nausea produced.]

In pulmonary emphysema and bronchial asthma M. considers the remedy to be distinctly superior to any other drug hitherto used.

In the use of heroin it is necessary to keep in mind that it is a derivative of morphin and to be used with the same discrimination as other sedatives. With so many favorable reports from so many careful observers, heroin may now be considered fairly established as a remedy of especial value in respiratory disorders.

Floeckinger (49, May) virtually agrees with the above conclusions.

J. R. L. Daly (119, Feb. 22) has found heroin of value in various respiratory disorders accompanied by cough and pain.

Dionin.—Dionin, the hydrochlorate of ethyl morphin, has come into some notice the past year as a substitute for morphin, codein and heroin. It is a white crystalline powder of slightly bitter taste and readily soluble in water, alcohol, and syrup. It is more of a hypnotic than heroin, and codein, less than morphin. Dose, about the same as codein, $\frac{1}{3}$ to $\frac{1}{2}$ grain three times daily. It is useful in coughs and does not check expectoration. It is

not to be used with very sensitive and excitable patients. Th. Janisch (13, Dec. 19, '99) Meltzer (*ibid.*).

Heim (254, No. 46, '99) finds dionin to be between codein and morphin as an anodyne, hypnotic and sedative. The only unpleasant effect observed was in disease of the heart-muscle. Hoff (abst. 139, Nov.) gets good results on tubercular patients, it quieting the cough and improving the appetite. H. uses the following formula :

Quinine mur.,	
Sod. bicarb.....aa	2.0
Dionini.....	0.2 to 0.3
M. div. chart. No. X. S. One powder three times daily.	

Orthoform.—Luxenburger (13, Jan. 9) reports the results of his experimental and clinical researches on this drug. He finds it not only sterile but slightly antiseptic. It may be mixed with dermatol, zinc oxide, euophen or aristol, but not with bismuth subnitrate without chemical change. He finds it very reliable as a local anesthetic, powder and alcoholic combinations being more potent than those with vaselin or oil.

Nirvanin.—Mignon (81, No. 2) finds that nirvanin is not to be compared to cocain as a local anesthetic in the nose, throat and ear, even in 20 per cent solution, the effect when applied to the surface being very small. Injected beneath the mucous membrane, however, in $\frac{1}{2}$ to 2 per cent solution it is very effective, producing analgesia in four or five minutes. It is only to be ranked with those agents which come in use when cocain is contra-indicated.

Protargol.—H. J. Chapman (132, July, '99) recommends a 5 per cent solution of protargol used on a cotton swab as very effective in the early stage of acute pharyngitis or laryngitis. In the subacute and chronic forms a 10 per cent solution is very useful. It also hastens healing in tubercular ulceration.

De Stella (268, Vol. 78, Fasc. 4, '99) gets excellent results with a 10 per cent solution in purulent rhinitis. In tubercular and lupus ulceration it is not so good as lactic acid. Good results

were secured in chronic hypertrophic pharyngitis and pharyngitis sicca. In laryngeal affections with 2 to 10 per cent solutions at least as good results were obtained as with nitrate of silver and with much less discomfort to the patient.

Coryza.—F. Woodbury, Philadelphia, (7, Mar. 10) in the treatment of a common cold, has abandoned all specific irrigations of the nose and bases his treatment on the view that the disease is largely a neurosis. His favorite prescription in cases with severe local symptoms and excessive secretion is:

R. Pulv. morph. comp.gr. 20
 (Containing $\frac{1}{3}$ gr. morph., $6\frac{2}{3}$ gr. camphor.)
 Acetanilid.gr. 6
 Sod. bromid.gr. 10

M. Divide in capsules No. 12. One every half hour till four are taken, then every two hours.

This is usually followed by a tonic.

G. V. Woollen, Indianapolis, (6, Jan. 13) thinks that "the reason one takes cold is that one is *already* suffering often, if not continually, from subnormal temperature." This condition of subnormal heat is largely due "to poorly digested, excessively developed, partially assimilated, and non-eliminated nutritional elements in the system." Children are not born with catarrhal disease, but catarrhal disease is of childhood genesis, adults never contracting idiopathic catarrhal disease.

W. Scheppegegrell (70, Oct. 13) in a discussion of this subject, gives the usual etiology and directions for prevention. In the matter of treatment he thinks few of the remedies ordinarily given are of any value. Quinine in large doses he finds useless, or worse, and the same is true of the other ordinary remedies, opium, belladonna and aconite. In uric acid diathesis lithia is indicated. A brisk purge at the beginning is of benefit. Locally he gets best results from a $\frac{1}{2}$ per cent salt solution used in some form of douche.

L. B. Lockard (6, July 21) gives a very full and intelligent

statement of the measures necessary to the hardening of the body and the prevention of colds.

B. J. Wetherby (38, Nov. '99) recommends the following prescription as very serviceable in either coryza or hay fever :

Heroin	1 grain
Atrop. sulph.....	1-25 grain
Caffein cit.....	15 grains
Salophen	75 grains
M. ft. caps. No. 15. S. 1 capsule four times daily.	

W. E. Burton (270, Oct., '99) recommends irrigating the nose with a 1 to 8 mixture of tinct. of belladonna in water the first two days; after that an alkaline solution, followed by the belladonna wash.

Carbonic Acid Gas.—Joal (11, May 12) recommends carbonic acid gas in the treatment of vaso-motor rhinitis and acute and chronic coryzas. The stream of gas must be very fine to avoid pain and other discomfort in the nose. The first effect of the gas on striking the nasal mucous membrane is a slight turgescence of the turbinates, with hypersecretion. This is succeeded by contraction and some anesthesia.

A. Rose, New York, (6, Jan. 6) refers to the good effects of the carbonic acid gas douche in ozena, and says that he has had most gratifying results from the same remedy in acute rhinitis, both in children and adults. The action is like that of cocain, but more lasting. He considers it the ideal remedy in acute rhinitis.

Light.—O. Petersen (255, No. 47, '99) was so favorably impressed by the results seen at Finsen's clinic in Copenhagen, in the treatment of lupus, that he has adopted the method. H. W. Stelwagon (17, Aug. 18) writes of what he saw at this institute. The results were good. While sunlight was used on sunshiny days, the general impression among assistants and patients was that the arc lights were more satisfactory. In a large percentage of cases the mucous membranes of the nose or mouth were

affected, which condition not being suitable for the light treatment, other methods were used. A strong iodine solution was applied daily and galvano-cauterization was done twice a week.

J. W. Kime (68, Oct. 13) reports and illustrates some very interesting experiments on the power of penetration of sunlight. Pictures are shown taken from negatives by light passed through the human body. Several cases of lupus cured by light are described.

Thurnwald (14, No. 46, '99) reports one case of lupus of the face healed by the *Röntgen ray*, and A. Kuipers (250, No. 18, '99) reports two healed in the same way.

W. A. Pusey (7, Dec. 8) used the same treatment successfully. His methods are described.

Hot Air.—Lermoyez and Mahu (82, July 25) report very favorably on the use of a current of hot air in certain nasal affections. The air used is passed from the compressor through a heated coil, reaching a temperature of from 158° to 194° F. The application causes no pain nor any lesion of the mucous membrane. Obstruction due to simple chronic hyperemia of the erectile tissue is generally relieved permanently. True hypertrophy is little affected. Simple nasal secretions are much modified, but muco-purulent secretions are very little improved. Otalgia due to naso-pharyngeal inflammation yields after a few applications. Spasmodic sneezing is generally relieved at once; asthmatic dyspnea may or may not be relieved. Tinnitus aurium and deafness are helped only when dependent on disease of the naso-pharynx or Eustachian tube. The authors warn against over-sanguine expectations in regard to the treatment. They consider it contraindicated in septal deformities, polypoid degenerations, purulent coryza, ozena, syphilitic and tubercular nasal disease, adenoids, and sinus suppuration.

Miscellaneous.—A. de Simoni (64, Mar.), after a series of experiments, reaches the conclusion that pure *volatile essences* are so decidedly curative in grave lesions of the mucosa and at the same time so innocuous that they should largely displace the poisonous antiseptics in the general field of rhinology. He con-

siders that disinfection by these essences is the most thorough and practicable.

H. M. Thomas (137, Oct.) again presents the subject of the value of *antiseptic nebulae* in the treatment of pulmonary tuberculosis. T. claims for the treatment that it increases the respiratory capacity, diminishes the catarrh of the air passages, and keeps them aseptic, relieves cough and dyspnea, does not tax the alimentary tract and is withal rational and practicable.

A. T. Davies (174, Apr., '99) writes an article corroborating the observations of Ringer and Murrell as to the value of the *ipecacuanha spray* in chronic bronchitis.

Bayer, Brussels, (2, Apr.) recommends the *intratracheal injection* of one-half to one and one-half cc. of creosote carbonate with an ordinary laryngeal syringe in cases of catarrh accompanied by copious secretion, fetid or otherwise.

In the treatment of *croup*, M. P. Creel (141, Oct., '99) recommends one to three drops of *copaiba balsam* in emulsion four times daily. W. C. Wright (89, Jan.), in diphtheria in children of 10 to 16 years, gives a teaspoonful of *pure turpentine* every two hours till four to six doses are given. This is repeated after forty-eight hours if necessary, which is rarely the case. No kidney symptoms developed from the treatment.

In *spasmodic croup*, Holt uses the following with the happiest results:

R. Chloral	75 grains
Pot. bromid.....	45 grains
Ammon. bromid.....	30 grains
Cinnamon water.....	2 ounces

A teaspoonful, repeated in twenty minutes if not relieved. This dose is for a child of seven years.

E. Pyncheon (38, July) writes in praise of *nosophen* and *antinosine* in diseases of the nose, throat and ear. Where decided stimulation is wanted he advises a combination of the two powders, combining from 5 to 50 per cent of antinosine with the

nosophen. He uses a 1 per cent spray of antinosine in preparing the nose for operative procedures.

Chas. Moir (110, Dec. 1, '99) has used *methylene blue* in tonsillitis and nasal catarrh with apparent benefit. It is non-irritating in 1 to 5 per cent solution.

D. B. Kyle (32, Sept., '99) discusses the use and misuse of the *nasal douche*. Instead of the usual alkaline douche, K. uses a mixture of equal parts of aqueous extract of hamamelis and distilled water. He avers that the alkaline douche should never be used in acute processes.

A. D. McConachie, Baltimore, (3, Nov., '99) recommends an *alkaline solution* of the following formula for all cleansing purposes in the nose:

Sod. chloride	gr. 44
Sod. carbonate	gr. 12
Sod. phosphate	gr. 2
Sod. sulphate	gr. 12
Pot. chlorid	gr. 2
Pot. phosphate	gr. 2-3
Pot. sulphate	gr. 2
Water	pint 1

He believes this to furnish a more satisfactory cleansing wash than the normal salt solution. The compound is to be had in tablets containing one-eighth the above quantity of saline constituents.

Toth (187, No. 35, No. 40, '99) takes ground similar to that of Saenger last year, that *gargling* as ordinarily practiced is nothing more than washing out the mouth. [A view contrary to clinical experience and experiments of the editor.]

T. Heryng (296, No. 1), in an article on the subject, *approves of the gargle* and mentions its various therapeutic powers and indications.

A writer (68, Nov. 4, '99) calls attention to the uselessness of gargling as ordinarily practiced and directs that the patient *hold the nose* and throw the head back while gargling and he will then reach all parts of the oropharynx.

Lyon (141, Oct., '99) recommends the following gargle for granular pharyngitis: Resorcin 4, glycerin 15, water 150.

L. E. Blair (267, Aug., '99) recommends a mixture of resorcin 4.8, eucalyptol 0.6, menthol 0.6, benzoinol 120, as anesthetic, analgesic, antiseptic, and astringent in throat work.

W. Scheppegezell (7, Feb. 3) reviews the subject of *electricity* in diseases of the nose, throat, and ear. He commends the cautery in proper cases. Galvanism is found valuable in the opposite conditions of intumescent rhinitis and atrophic rhinitis. [There is genuine atrophy in the ordinary intumescent rhinitis.] Other uses of the current are considered.

Geo. W. Wagner (59, Sept., '99) thinks the best method of *arresting hemorrhage* is with oxygen, either inhaled or applied direct.

H. de Fougerey (abst. 2, Nov.) gives the history of three cases showing the efficacy of a one-half per cent solution of chromic acid as a local application for malignant tumors of the mucous membrane of the pharynx, nose and larynx. Two cases of metastasis in the palate were completely cured and a laryngeal cancer was greatly relieved. The application was made every two days.

S. S. Adams, Washington, (17, May 5) has seen several cases of poisoning from the fumes of vapo-cresolin.

THE EAR

THE EAR.

ANATOMY AND PHYSIOLOGY.

Gustav Zimmerman, Dresden, (128, Oct.) asserts that the theory that the ossicles transmit the sound waves from the drum membrane to the internal ear is erroneous. He believes that all vibrations of sound pass indiscriminately through the membrana tympani to the air of the middle ear and the bone of the cochlear capsule, and from here betake themselves directly to the labyrinth capsule without needing any conduction through the chain of ossicles. For, with ordinary vibration of sound, the membrana tympani is not, as Hemholtz assumed, moved in and out *in toto* nor is the chain of ossicles or the labyrinthine fluid (even in the slightest degree) displaced as a whole. If, moreover, with a small minority of vibrations, any such motions are accomplished, they do not serve the physiological purpose of carrying the sound to the ear and causing it to be perceived, but, on the contrary, to weaken it and to regulate it to the finest shades of perception. Sound enters the internal ear through the bony walls as well as through the oval and round windows.

G. Veraglia (282, Vol. IX., p. 49) finds three *varieties of elastic fibres* in the drum membrane: 1. Elastic radiating fibres of various thickness. 2. Elastic circular fibres which are most numerous in the periphery and run in circular layers. 3. Very fine reticular fibres which connect the two other varieties.

M. Jacques (1, Oct.) has made a study of the *finer innervation of the drum membrane*. He utilized the selective action of methylene blue, and finds that there exists upon the external surface of the lamina propria a fundamental plexus composed of the nerves which come to the membrane either at its superior

pole or at its entire periphery, a plexus whose meshes are stretched according to the divisions of the vessels; that is to say, in a radical manner.

More superficial bundles are detached, and they run in the cutaneous-corium in all directions and terminate in complex branching forms and of very great fineness comparable to peripheral sensory terminations.

G. Gaglio (2, Oct. & Nov.) reviews the results of *experiments on the semi-circular canals* by a great number of physiologists. His own experiments show that the effect of anesthesia of the semi-circular canals, obtained by the application of cocain, are the same as those produced by section or destruction of the parts.

Topography of the Naso-Pharynx.—Regardless of the other variations in the topography of the ear and the naso-pharynx, B. A. Randall, Philadelphia, (1, July) finds the Eustachian meatus bearing a constant relation to one landmark, the back edge of the hard palate. He thinks there is need of a better appreciation of the anatomy of this part.

Auditory Nerve.—To determine the central connections and relations of the auditory nerve, Alden Turner (2, Mar.) has made a series of experiments upon the brain and auditory apparatus of monkeys. The following experiments were performed with a study of the resulting degenerations:

1. Section of the auditory nerve distal to the auditory ganglion.
2. Degeneration following lesion of the accessory auditory ganglion.
3. Destruction of the internal geniculate body.

A brief summary of the observations may thus be stated:

1. The cochlear fibres end in the accessory auditory ganglion.
2. In the auditory ganglion the fibres of the corpus trapezoides arise: some passing through the lateral fillet of the same side and some crossing to the opposite side.

3. The superior olivary bodies have a close and direct connection with the trapezoid body.

4. Fibres coming from the auditory ganglion pass directly to the internal geniculate body of the opposite side.

5. There is no evidence that fibres pass directly into the temporal lobe without interruption in the internal geniculate body.

6. The complementary cortici-fugal tract of the auditory system is the so-called temporo-pontine tract of Bechterew.

Facial Nerve.—To determine the relation of the facial nerve to the mastoid operation, R. D. Joyce, Dublin, (2, Jan.) has made systematic measurements of thirty temporal bones. The object was to determine the exact distance from the surface of the skull to the facial nerve, in the location usually selected for the mastoid operation. Each bone was drilled vertically from the surface to the aqueductus Fallopii in three places; *a*. A point immediately behind the center of the external auditory meatus. *b*. A point immediately behind the upper border of the meatus. *c*. A point above the center of the meatus. From the point *a* the average distance to the nerve was 16.75 mm. From the point *b* the average distance was 18.5 mm., while the minimum was 14.75 mm. From the point *c* the average distance was 19.4 mm., while the minimum was 16.25 mm.

Summary: 1. The facial canal lies altogether in front of the mastoid process and a drill sent straight in from any point on the surface of the latter cannot injure the nerve.

2. Measured from the point *b* the facial nerve is in 43.3 per cent of the cases more superficial than the external semi-circular canal. In the same percentage of cases this was just reversed, and in the remaining 13.4 per cent these two structures were the same distance from the surface. Thus the external semi-circular canal cannot be taken as a guide to the depth of the facial nerve.

3. The average distance of the facial canal from the point *b* is slightly less than that of the external semi-circular canal.

4. In removing the outer wall of the attic it should be remembered that the external semi-circular canal is almost always (91 per cent) nearer the point *c* than the facial nerve; however, as it is 1.5 mm. higher than the latter it is almost out of danger; besides it has a thicker covering of compact bone in this situation (attic) than has the nerve.

Chorda Tympani.—Kiesow and Nadoleczny (127, vol. xxiii.) have experimented with the chorda tympani in two cases of chronic purulent otitis media. Their results confirm the view that this nerve supplies the taste fibres for the anterior two-thirds of the tongue.

Location of the Lateral Sinus.—In order to discover, if possible, some rule by which the relation of the lateral sinus to the mastoid may be determined previous to operation, Emil Amberg, Detroit, (59, Nov., '99) has studied, measured and compared a large number of temporal bones.

He is inclined to agree with Trautmann, of Berlin, who says that displacement of the lateral sinus is due to, and is indicated by asymmetry of the skull. No skull is entirely symmetrical; the right side, as a rule, smaller than the left. On the smaller side the lateral sinus is displaced forward; therefore the lateral sinus is displaced more forward on the right side.

The following signs indicate that the sinus is displaced forward; and that greater care is necessary in operating:

1. The eye stands somewhat higher on the side on which the lateral sinus is displaced.

2. The septum narium pushed toward the opposite side, a prominence on the opposite side, tip of the nose toward the side on which the lateral sinus is displaced forward, apertura pyramiformis larger, stands somewhat higher on the same side.

3. Hard palate on the same side somewhat higher and narrower.

4. The incisor is placed a little more toward the side on which the lateral sinus is displaced forward.

5. Occiput pressed inward, also parietal bone; on the other side pushed outward.

6. The greater extent of the planum mastoideum and the more perpendicular it stands on the outer meatus, the less strong the lateral sinus is developed. The planum mastoideum forms an angle greater than a right angle with the meatus.

In an examination of seventeen temporal bones he finds the thickness of the wall of the sinus varying from 2.5 millimeters to 10 millimeters; the average being 5.75 millimeters.

[The editor has found that the sinus can be very accurately located by means of the tuning fork and stethoscope applied to the temporal bone. With the bell of the stethoscope on the mastoid the handle of a vibrating tuning fork is placed against the head an inch behind the mastoid. The fork is then moved gradually closer to the stethoscope. As soon as the border of the mastoid is reached a decided increase in the volume of the fork will be noted.]

The Petro-Squamosal Sinus.—A. H. Cheatle (2, Jan.) discusses the comparative anatomy and the human anatomy of the petro-squamosal sinus. In early fetal life this sinus carries all the intracranial venous blood and empties it into the primitive jugular (afterwards the external jugular). Later the anterior opening usually closes and the sinus, or its remains, forms a connection with the middle meningeal vein. The sinus dwindles away to a very small size while the opening in the lateral sinus often persists. In infancy and childhood the sinus is usually well marked, opening into the lateral sinus behind, and the middle meningeal vein in front. In adult life it is sometimes difficult to find.

The presence of this sinus explains the occurrence of general pyemia and pyemic meningitis of otitic origin.

Two cases are recorded showing the relation of this sinus to the above disease. A boy, aged six, died of pyemia. At the autopsy the petro-squamosal sinus was found abnormally large. At its extremity necrosis had occurred and pus had entered the

sinus, causing a thrombus which had extended backward into the lateral sinus. Meningitis was present on the same side.

A man aged twenty, with a discharge from the right ear, died with symptoms of meningitis. At the autopsy suppurative meningitis was found over the right side, with septic thrombosis of the lateral and longitudinal sinuses. A vein large enough to admit an eye probe was found which made a direct communication between the tympanum and the lateral sinus.

It is also suggested that this may be the pathway of some of the unaccountable intracranial affections frequently met with by the physician, such as the posterior basic meningitis of infants, cerebro-spinal meningitis and perhaps some cases of tubercular meningitis.

From the large size of the sinus in early life more danger of intracranial complications from this source exists in children than in adults.

AURICLE.

Horny Excrescence.—J. C. Lester (4, Aug.) reports a case of *horny excrescence* on the left ear. The patient was a man fifty-eight years old. Six months before coming under observation he had noticed a small pimple on the external border of the auricle. When the growth was first examined it was about one and one-fourth inches long and about one inch wide at the base. Almost the entire cartilaginous portion of the ear was ossified.

In attempting to take a plaster cast of the ear the growth became detached. Hemorrhage was severe. The points of interest are: 1. The anatomical location and the history of severe freezing of the auricle. 2. The age and sex of the patient. 3. The severe hemorrhage following removal. 4. The ossification of the auricle. 5. The permanency of the recovery.

M. Lermoyez (82, Jan. 3) describes two varieties of eczema of the ear: (a) acute, which is usually moist, and (b) chronic, which is usually dry. Eczema of the canal, while more difficult

to treat, is more important, because of the tendency to occlude the meatus, or to the formation of furuncles.

G. Liaras (11, Feb. 3, 10 and 17) reviews the literature of *lupus of the ear*. Lupus of the auricle he finds very rare. Of the 286 cases of lupus of the face reported by Leloir in less than two per cent was the auricle attacked. When the meatus is affected the infection spreads from the auricle—never from the middle ear. When lupus attacks the middle ear it is usually secondary to lupus of the naso-pharynx.

Lannois (1, Nov.) reports the removal of a neuroma from behind the auricle. The tumor was painless and extended to the occipital bone and formed a non-continuous streak along the sterno-mastoid muscle. Histological examination revealed its true character.

J. M. Moir (8, Jan. 6) reports the case of a boy whose ear was bitten off by a horse.

AUDITORY CANAL.

Defect in Auditory Canal.—J. Gruber (19, Jan.) describes a case of *dehiscence of the inferior wall* of the external auditory canal. The jugular bulb extended through the opening and was covered only by the skin of the canal. Increased tension in the vein caused by pressure on the internal jugular made the bulb protrude farther into the canal.

The defect in the bone measured about 4 by 6 mm.

Tumors.—T. R. Pooley, New York, (3, Feb.) describes an *osteoma* which he found in the external auditory canal of an Italian patient thirty years of age. The growth occluded the canal and interfered with the escape of a chronic suppurative discharge. The tumor was wrenched from the ear with a pair of Hinton's forceps. The point of attachment was found to be a roughened surface of the bone in the posterior wall of the canal close to the drum membrane. The growth was three-fourths of an inch in length and one-fourth inch in diameter. Examination

of the tumor showed it to have an osseous center surrounded by a cartilaginous covering, which seemed to indicate that the nature of such growths, whether spongy or compact, depends upon the more or less advanced state of the osseous structure.

Hennebert (2, Apr.) reports a case of *cavernous angioma* of the external auditory canal removed by the galvano-cautery snare. The diagnosis was confirmed by microscopic examination.

L. S. Somers (3, Feb.) reports a case of *cyst of the external auditory canal* as follows: M. H., female, age seventeen years. Suppurative otitis media of both ears for over a year. Has never had any serious illness, and the aural discharge came on without pain and with no apparent cause. The left ear presented the usual appearances of chronic suppuration with a large perforation in the posterior inferior segment of the tympanic membrane, while projecting from the right ear and entirely filling the lumen of the meatus was a glistening, pale tumor. This resembled to a marked degree a serous cyst. It was covered with a purulent secretion escaping from the suppurating middle ear, and giving it this appearance by macerating its surface epithelium. Probe pressure caused no unusual tenderness and elicited the feeling of a tense sack filled with watery fluid. The blood supply was poor, and no vessels could be seen ramifying over its surface, and it was attached to the superior wall of the canal by a rather large, flat pedicle. The cyst was removed intact by snare under cocaine anesthesia; bleeding was slight, and it was then seen that the growth originated on the superior canal wall at the junction of the cartilaginous with the osseous portion. When removed it measured twenty mm. in length, by seven in breadth, and on section contained a serous fluid almost myxomatous in nature and not as watery in character as we were led to suspect by palpation when the tumor was in situ. Microscopically it consisted of an external surface of flat epithelial cells not taking the stain well on account of necrotic changes as a result of the maceration in the ear discharges. Under this was a thick layer of cuboidal epithelium sharply demarcated from the third layer of connective tis-

sue cells, irregularly arranged and shaped from the pressure of the fluid contents; the blood vessels of the walls were few in number, small in size and sparsely disseminated. The fourth and inner layer was composed of the same cells with an admixture of fibrous tissue and granular debris forming a well defined wall around the fluid contents.

As isolated glands are irregularly scattered over the auditory canal, especially at the junction of the osseous, with the cartilaginous portion, the cyst undoubtedly sprang from one of these, and while at first sight it presented the appearance of a broken down sebaceous gland, it became apparent, on microscopic examination, that it had developed as an independent formation, and the cyst cavity had further increased in size from that of its original capacity by the diminution of nutriment and subsequent degeneration and liquefaction necrosis of its inner containing wall.

Urbano Melzi, Milan, (2, Jan.) reports a case of *endothelial fibro-angioma* of the external auditory meatus. The patient was a woman twenty-two years of age, who gave a history of chronic discharge from the ear for a year. On examination a reddish-brown, irregular shaped tumor, the size of a bean, was found occupying the lumen of the external auditory meatus. The tumor sprang from the posterior superior wall of the canal and was easily removed with Wilde's polypus remover.

From the histological examination, which is given very fully, Melzi concludes that the growth is an endothelial fibro-angioma, and benign in character. The treatment was limited to scraping the base and repeated cauterizations. After a few weeks the canal was smooth and the discharge stopped.

W. H. Kelson (2, Dec.) reports a case of *exostosis* of both auditory canals. The chinks between the bony tumors and the meatal walls were so narrow that slight accumulations of cerumen or epithelial debris interfered with the hearing.

Passow (12) reports a case of *fracture of both auditory canals* from a fall from a bicycle upon the chin.

Furuncles.—A. W. Sterling, Atlanta, (1, Mar.) has found

cases in which *irritation about the pharyngeal meatus of the Eustachian tube* produced intense itching of the auditory canal. In the efforts to get relief by scratching, the surface is often abraded and diffuse inflammation or furuncles may follow. The treatment of such conditions should include attention to the pharynx as well as to the canal itself.

As a preventive in cases of *recurring furuncles* of the external auditory canal, C. Gurnee Fellows, Chicago, (28, Sept. 15) instructs the patient to cleanse the canals, occasionally, with peroxide of hydrogen and to apply a simple cerate or plain vaselin, not oftener than once each week. Some constitutional disturbance, which requires attention, is usually found in these cases. A case is reported in which the furuncles continued to recur in spite of both local and constitutional treatment. A short residence in the country, away from late hours, high living, receptions and dances, promptly relieved the ear trouble.

In furunculosis of the auditory canals in infants, G. C. Stout (7, Mar. 31) advises early incision to evacuate the pus, after which oxide of mercury ointment should be rubbed into the parts affected.

Occlusion.—Schwartz (203, vol. xlviii, p. 261) reports twelve cases of *atresia* of the external auditory canal, most of them the result of a previous mastoid operation.

Usually a radical operation is necessary to bring about a permanent cure. He emphasizes the importance of retracting the auricle in mastoid operations in order to have a large field for operating.

E. W. Fleming (1, July) says: Extensive sacrifice of the tissues lining the bony canal in any case inevitably leads to *cicatricial contraction* more or less occlusive. Persevering after treatment, especially with the assistance of skin grafts, may limit this to a minimum.

Foreign Bodies.—The subject of foreign bodies in the external auditory canal has always been considered important by the otologist. In spite of the efforts of the profession to impress

upon the laity the necessity of care in the removal of foreign bodies, cases in which great damage has been done, not by the presence of the foreign body, but by the efforts to remove it, are constantly coming under our notice.

M. Lermoyez (82, Nov. 10) says that it is the unskillful efforts to remove foreign bodies from the ear that does harm rather than the foreign body itself. Hundreds of lives might be saved every year if physicians, parents and nurses realized that a foreign body in the ear does no harm as long as it is let alone. Under ordinary circumstances the syringe is the best means of removing a foreign body. When it is necessary to use instruments in the canal it is better and safer to give the patient an anesthetic than to take any chances of injuring the ear by the patient's inability or unwillingness to hold still. A retroauricular incision is better than to use any violence in the natural canal.

C. A. Sturrock (9, Nov. 25, '99) removes smooth foreign bodies from the external auditory canal by means of *suction*. A short piece of *rubber tubing* of proper size to readily enter the canal is pushed against the foreign body while suction is made at the other end of the tube by means of a piston syringe. When the tube end is moistened with glycerin there is less chance for air to enter between the foreign body and the end of the tube.

The removal of a common honey bee from the external auditory canal is reported by C. H. Lovewell, Chicago, (17, May 26). Upon examining a mass of cerumen he had removed by syringing he found the bee imbedded in it. The only explanation the patient could make of its presence was that while working on a farm in 1872 an insect flew into his ear. Great pain was immediately experienced which lasted three days and subsided while the patient was asleep. This led the patient to suppose that the insect had escaped from the canal. From that time to the present no discomfort had been experienced.

Of the unusual foreign bodies found in the auditory canal perhaps that reported by B. F. Church (1, July) is the most unique. In this case a live tick was found in the canal. The

patient gave a history of having had a scratching or clawing in his ear for two years. From the amount and condition of epithelial scales and cerumen in the canal external to the tick Church is inclined to credit the patient's story regarding the time he had carried the insect.

A. J. Holmquist (68, Mar. 3) reports the removal of three maggots from the ear.

A novel method of removing a foreign body from the ear is reported by J. G. Macaskie (8, June 2). A piece of rubber from the end of a lead pencil had been pushed into the auditory canal. As it fitted the canal snugly difficulty was experienced in attempting to remove it instrumentally. The end of a small piece of twine was teased out, coated with seccotine and pushed tightly against the piece of rubber and held in position by a packing of cotton. After twenty-four hours there was firm cohesion and the cord, cotton and rubber were removed together without difficulty.

R. Payne, San Francisco, (1, Aug.) reports a case in which, in the effort to remove an insect from the ear, the patient injured the drum membrane. Suppuration followed. Subsequently, the ossicles were removed and later a radical mastoid operation became necessary.

S. Kohn (68, June 23) estimates that in ten to fifteen per cent of all ear diseases cerumen or debris can be found in the external auditory canal. In the removal of these accumulations the syringe is better than curette or forceps.

In cleansing the external auditory canal, C. G. Fellows (28, Sept. 15) uses cotton on an applicator with peroxide of hydrogen. If there is dead epithelium or pus in the canal, the wiping should be continued until reaction ceases. Massaging the canals with cotton assists to keep them in a healthy condition.

Dermatomycosis.—L. Bar (1, Oct.) reports a case of *dermatomycosis* in which the micro-organism was the trichophyton of Malmsten. He describes the characteristics of the case as acute, subacute or chronic inflammations, characterized by a dermatitis

which may be very severe, with a vascular and suppurating eruption, or one which is simply erythematous or squamous.

The prognosis is good in all acute cases, varying in regard to the hearing in cases of slow progress.

The diagnosis, which is established by microscopic examination alone, should be made in furunculosis otitis, otomycosis, impetiginous and squamous eczemas, acnes, erythemas, syphilitic roseola and the syphilides.

Among the parasiticide remedies which may be advantageously employed bichloride solutions, 1 to 1,000, and naphtholated vaselin, 1 to 10, appear the most appropriate.

DRUM MEMBRANE.

Traumatic Puncture.—F. R. Packard, Philadelphia, (7, May 12) gives extensive statistics on the relation of ear injuries and mentions several causes of rupture of the membrane, among which are slapping the ears, explosion of gunpowder, and one case caused by the concussion of air from a stroke of lightning. He also calls attention to the fact that in the battle of Santiago, when the men did not have time to take the necessary precautions, many ruptures of the drum-membrane occurred; while at the battle of Manila the men protected their ears with cotton and no such injuries were reported.

Packard also gives a detailed account of eleven cases of traumatic perforation coming under his own observation.

In the cases reported there were four patients with perforation of the membrana tympani due beyond a doubt to the sudden condensation or rarefaction of air in the external auditory meatus. Three more could be, with probability, assigned to this cause. One of the latter had been struck on the side of the head by a bag of corn falling some distance, another had been struck in a quarrel, most likely by his opponent's fist, the third had received a blow directly over the ear from the blunt handle of a

pitchfork. Of the four undoubted cases, one was the result of the impact of water, one resulted from working in a caisson, and two were the results of blows from the fist. A very complete bibliography of the subject of injuries to the membrane is given.

G. L. Richards (1, Nov.) reports a case of traumatic rupture of the drum membrane caused by a stream of water from a fire hose. The opening was in the posterior inferior quadrant, and about one-eighth of an inch long by one-sixteenth inch in breadth. Richards thinks that it was due to the impact of air in the canal rather than to the water alone.

T. D. Tuttle, Helena, Mont., (70, Sept. 29) reports an unusual case of injury to the ear from a hair pin. The pin was forced into the ear by the patient turning in bed while asleep. One point of the pin entered the antero-inferior wall of the canal about half an inch external to the membrane. It passed inward along the canal beyond the margin of the membrane. A perforation was found above the center of the membrane, presumably caused by the other point of the pin. Complete recovery followed.

Lohnberg (13, Mar.) reports a case of puncture of the upper posterior quadrant of the drum membrane with a hat pin. The injury was followed by vertigo, vomiting, retardation of the pulse and considerable discharge of serous fluid for about ten days. He believes that the pin passed through the tegmen tympani and entered the subarchnoid space.

Marx (2, June) reports the case of a girl of seventeen with a large, heart-shaped perforation of the membrana tympani, through which the carotid artery could be seen as a bluish-gray area, pulsating strongly and showing a double punctiform reflection. The pulsation was synchronous with the pulse, and ceased during compression of the carotid. The part felt soft and membranous to the touch, and was surrounded by smooth, bony edges. There was no history of caries, so that the defect of the lower and anterior tympanic wall must be considered congenital.

ACUTE MIDDLE-EAR DISEASES.

Acute Catarrhal Otitis Media.—Jobson Horne (1, Sept.) reports a case in which inflammation of crypts in the mucous membrane covering a defined recess in the roof of the naso-pharynx, gave rise to otalgia and other symptoms.

The patient complained of pain in the left ear and hearing had become impaired. Nothing could be found in the condition of the ear, the mouth, or the fauces to account for the pain. Posterior rhinoscopy showed small, circular, sharply punched out crypts or depressions in the outermost part of the roof of the naso-pharynx, directly above the cushion of the right Eustachian orifice and the arch of the posterior naris. On the left side one of the crypts contained pus, and the edges were inflamed and gave the appearance of an ulcer.

Under treatment the hearing returned to normal and the pain entirely disappeared. The ulcerated appearance was no longer visible, but the crypts, which contained pus, could be readily seen. The treatment consisted of nasal douching and the use of quinine and potassium iodide.

[The editor recalls a number of cases in which pain in the ear has been relieved by treatment of a small inflamed area at the top of the tonsil just beneath the arch formed by the meeting of the anterior and posterior pharyngeal pillars. In some instances the discomfort caused by the application of antiseptics to that area was referred to the ear.]

In the *treatment of acute inflammation of the middle ear*, S. S. Bishop, Chicago, (1, Oct.) suggests the use of hot tobacco smoke. A piece of clean cotton is placed lightly in the mouth of the auditory canal. A pipe is partly filled with tobacco and lighted. Then a piece of thin cloth is placed over the mouth of the pipe-bowl and blown gently through, while the lip piece of the pipe stem rests against the cotton pledget. This filters the warm smoke through the cotton into the canal of the ear, and a grateful sedative effect is soon obtained.

Bishop considers leeches of great value and gives full directions as to their use.

Of other plans of treatment he says: Fever calls for anti-pyrin or its equivalent in some febrifuge that is less of a cardiac depressant. Phenacetin and acetanilid act well. Quinine, the enemy of the ear, must not be used. It aggravates the existing hyperemia and conduces to a permanent deafness. Alcoholic beverages and smoking are prohibited, and any inflammatory condition of the respiratory tract must be vigorously combated.

If the pain and bulging of the drum-head continue, notwithstanding all efforts to counteract the disease, and rupture of the membrana tympani is threatened, it should be incised with the paracentesis knife, in the posterior-inferior quadrant, so as to afford the most perfect drainage. A warm 8 per cent solution of cocain or eucain should be left in the ear for twenty minutes before the paracentesis and, if the pain does not soon cease after perforating, more cocain should be instilled as hot as can be comfortably borne, so as to percolate through the perforation and reach the mucous membrane within. This will give relief. The incision should be a long one, cutting through the entire area of the postero-inferior quadrant vertically. The longer it is the more it relieves the tension of the nerves of the membrane and the freer the drainage. The paracentesis knife must be absolutely sharp and should be dipped in alcohol before using. The perforation usually heals in a few days if no pus has formed.

After the pain is relieved, which should be the object of our first efforts, the ear may be inflated with as low pressure as will accomplish it. The air pressure in the tympanic cavity promotes absorption of any fluid contents and will be likely to improve the hearing. This treatment had best be administered for a few days once a day. As improvement progresses the treatments can be given at greater intervals until the normal condition is established.

Diet, exercise and clothing should be regulated on general hygienic principles.

In the *treatment of acute otitis media*, especially in infants, Miot (11, Feb. 24) considers bleeding of first importance. In

old age bleeding is not advisable. The amount of blood taken should depend upon the acuteness of the inflammation and the age of the patient. When leeches are not obtainable Heurteloup's artificial leech may be employed.

L. Einis (124, Sept. 17) advocates the use of *glycerin* and *carbolic acid* in the auditory canal as soon as the membrane shows redness.

F. H. Boucher (202, Mar.) is opposed to the hasty performance of paracentesis in acute catarrhal otitis media. When it is done it should be under strict asepsis and the meatus should be packed gently with a strip of iodoform gauze.

A case of acute catarrhal otitis media, without pain and showing a characteristic typhoid curve, is reported by C. H. Burnett (17, Mar. 5). Paracentesis promptly relieved the symptoms.

R. Fullerton (194) finds *two varieties of otitis media*. In the first the whole tympanic cavity seems to be affected. The membrane is red and bulging, while all the landmarks except the short process disappear.

In the second the inflammation seems to be limited to the upper portion of the tympanic cavity. The membrana flaccida bulges, and the inflammation extends upward to the segment of Rivini. In the first class he does not perforate except when the membrane is very thick and the patient is suffering severe pain. When let alone the results are as good as when the membrane is perforated.

In the second class early paracentesis is demanded. If let alone the antrum and mastoid are likely to become involved, or the case may end in chronic suppuration with caries of the attic and ossicles.

Acute Suppurative Otitis Media.—H. S. Straight, Cleveland (134, May), read a paper before the Cleveland Medical Society on *acute inflammation of the middle ear*. He recognizes *two varieties*, catarrhal and suppurative, but finds it impossible to make an early differential diagnosis between the two conditions.

He favors McBride's suggestion that acute inflammation of the middle ear be classified as mild and severe.

The treatment recommended is: Rest in bed, applications of heat, one full dose of opium, paracentesis.

If rest in bed, one full dose of opium, and applications of heat do not relieve the pain, and if there is fever in any marked degree, rapid pulse and marked inflammation of the middle ear, a paracentesis ought to be made. Six cases are reported showing immediate relief given by paracentesis.

In the discussion following the paper, W. R. Lincoln recommends that paracentesis should be made under complete anesthesia and that the incision should be extensive. In many cases he has found that relief does not follow for considerable time after the membrane has been incised.

The *pathological lesions* which Panzer (1, Oct.) has observed in a case of *acute suppurative otitis media* are the following: The mucosa of the antrum is markedly thickened and infiltrated with round cells; the deepest portion is covered with an enlarged and ramified network of blood vessels and lymphatics. The mucosa sends fungus prolongations into the foramen opening of the antrum, which is partly occupied by the exudate; the epithelium, well preserved in places, has also disappeared in other ones.

The tympanic cavity is filled with exudation, the tympanic membrane is convex, and its blood and lymphatic vessels are greatly increased in number. The epithelium of this membrane, preserved at its lower portion, is little by little destroyed at its upper portion. At its external part it is raised, whilst the rest of the membrane is thickened from the infiltration of round cells which, however, never penetrate into the intima of the tympanum; at the point where perforation takes place, an abundant exudate is found, as also in the space of Prussak.

The exudates, which are composed of an agglomeration of mono- and polynuclear leucocytes, occupy more particularly the postero-superior part of the lower portion of the tympanum, and

finally the region in the radius of the fenestra ovalis. The mucosa of the tympanum is also thickened and presents folds; infiltrated with round cells, it is at times covered with epithelium; at other times it is deprived of it. The attic contains a few fungosites, but the bony part is intact. The incus only presents a small diseased point produced by the loss of substance in which large cells may be seen, under high power.

Upon the stapes are found voluminous granulations which completely surround it, and between its branches the exudation is found. The other organs of the tympanum share in the inflammatory process, and notably the tendons of the tensor tympani. The chorda tympani is itself covered with granulations; as to the facial, it is penetrated by the exudate which is infiltrated in the bundles of its fibrous sheath, which explains the ease with which the nerve may be implicated, in a child, in inflammatory lesions of the tympanum.

J. A. Jones calls attention to a class of cases in which there is so much swelling of the external auditory canal that paracentesis cannot be accomplished, and when spontaneous perforation occurs there is hardly room for the fluid to escape from the canal.

E. H. Pomeroy (119, Jan. 8) reports five cases of *otitis media in infants*. He emphasizes the importance of thorough examination by inspection, and calls special attention to his observation that membranes may have a perfectly normal appearance and still the middle ear contain pus and be the source of a toxemia endangering the patient's life.

Paracentesis in the lower posterior quadrant is free from danger and gives prompt relief. Paracentesis should be done under a general anesthetic after thorough cleansing of the canal with bichloride douching.

A case of acute *otitis media, simulating at first meningitis and later brain abscess*, is reported by O. J. Stein, Chicago, (145, Sept.).

A boy two and a half years old was suddenly seized with convulsions on the 26th day of January, 1900. Temperature, 104 degrees. Vomited once. A diagnosis of entero-colitis was

made, and he was put on small doses of calomel. The following day the temperature was 99 degrees. No more convulsions or vomiting. From Jan. 29 to Feb. 5 the temperature ranged between 104.5 and 99 degrees, with rather sudden remissions. Patient very restless. Meningitis was suspected and a specialist on children's diseases was called in, who made a diagnosis of tubercular meningitis. Its cause was looked for about the ear, but no evidence of ear trouble could be made out by them. From the 5th to the 9th the temperature was between 97.4 and 98.8 degrees; pulse, 116 to 88. Patient very restless under full doses of bromide. Inclination to throw head backwards and arms over the head frequently. From the 9th the temperature went gradually up until the afternoon of the 12th, when it reached 103. Then it fell again to 100, only to go up once more to 103 on the following day. The pulse became very weak and stimulants had to be used continually. He was now somnolent most of the time, without any bromide. On the 14th the temperature became subnormal and remained so for the next seven days. At this time the eyes were examined by an oculist, but no fundus changes were found. On the 26th Stein saw the patient for the first time during his illness. The little patient was emaciated to the extreme, and as a consequence was weak and anemic. His right ear began discharging the day before, and when seen was continuing to do so. The secretions were examined and found to contain only the streptococci and staphylococci. The left ear was dry, but the drum membrane bulged slightly, showing fluid within the middle ear. The posterior superior wall of the ear canals showed no sagging. Both mastoid regions were sensitive to pressure, but presented no redness or edema. Temperature at this time was 100.4 degrees and his speech was disturbed. The aphasia was of the ataxic variety. When spoken to his answers were long drawn out, in measured style, and not entirely correct. Very often the wrong word was used. There was clearly a lack of co-ordination in the muscles concerned in speech production. Two days later the left ear began discharging, and

both ears continued to discharge profusely, with a corresponding rapid improvement in the patient.

Dundas Grant (2, Oct.), in writing on the *diagnosis and treatment* of otitic pyemia, says: When, in the course of acute or chronic suppuration of the middle ear, the patient is attacked with rigors and the temperature undergoes oscillations between elevation and depression, it is safe to assume that we have to deal with otitic pyemia in one of its forms. Less frequently a continuous high temperature, persisting in spite of free exit of the discharge, and accompanied by rapid and intense lowering of the vital powers, indicates that a more purely septicemic process is in progress. The casual relation of the ear disease to the constitutional disturbance is liable to be overlooked by the physician, especially if he is not accustomed to examine the ear.

The chief diseases to which the constitutional disturbance of otitic pyemia may be attributed are typhoid fever, malaria, acute rheumatism, ulcerative endocarditis, acute tuberculosis and meningitis.

In the treatment of otitic pyemia the expectant plan is mentioned only to be condemned. Non-surgical treatment may take the form of diuretics and the purgatives. In the purely septicemic cases the patient's strength may be kept up by the administration of alcoholic stimulants, quinine, ammonia, and a nourishing diet.

To counteract the toxic effect of streptococcus or its products, injection of antistreptococcus serum may be made.

The surgical treatment varies according to the conditions in the ear and the extent of the pyogenic process. It may consist of:

1. Incision of the drum membrane for the exit of pus accumulated in the middle ear.
2. The removal of polypi or masses of granulations from the middle ear.
3. The free opening of the mastoid cells. Pus in a single cell in the tip of the mastoid which has been overlooked in operating may keep up the pyemic symptoms.

4. Opening the lateral sinus for the removal of septic thrombi and, when necessary, the ligation of the jugular and cleansing it of septic material.

Cases are reported illustrating the different surgical procedures.

F. Whiting, New York, (128, Feb.) says that the elements which chiefly contribute to early *necrosis of the incus* during the process of suppurative otitis are three in number and their relative importance might be thus expressed: 1. Scanty vascular supply. 2. Suppuration of the ossicle. 3. The shape of the ossicle. The first is the most important element in the causation of early and rapid necrosis of the incus. The second and third are also contributing factors in bringing about such a condition. His personal experience and observation led him to extract the incus as a prophylactic measure against chronic suppuration under the following conditions:

1. Whenever, by inspection, probing, or otherwise, caries of the incus can be demonstrated.
2. Whenever, by accidental curetting about the aditus or by careless manipulation, the incus has been dislocated.
3. In all cases of scarlet fever or measles if the discharge has existed for four weeks, and in similar cases, irrespective of the duration of the discharge if streptococci predominated as the infective agent.
4. In every case in which the discharge has persisted for three months or more.

He based his views upon four cases, which he detailed at length.

The *signification and importance of earache in children* is discussed by T. H. Halsted, Syracuse, (70, Mar. 17) who sums his conclusion thus:

1. Earache in children is generally caused by acute inflammation of the middle ear, suppurative or catarrhal.
2. Infants and young children may have suppuration in

the middle ear without giving satisfactory evidence of pain, or without rupture of the drum-membrane.

3. In the absence of other known cause of pain, from which a child is evidently suffering, the first cause to be thought of should be acute otitis media, and this calls for an examination of the drum-membrane.

4. It has been shown by examination of the middle ear during life and post-mortem that purulent otitis media is nearly always present in acute infectious diseases of the gastrointestinal and respiratory tracts in young children, especially in gastro-enteritis and bronchopneumonia, to which diseases it probably stands in a causative relation.

5. The cause of death in many acute and chronic infectious diseases, in meningitis and in the exanthemata is the result of unrecognized and untreated abscess of the middle ear.

6. Repeated earaches in children are ordinarily but a sign of acute exacerbations of a chronic otitis media resulting from adenoids.

7. In adult life, so-called catarrhal or progressive deafness is often but a final stage of otitis media, which had its beginning in early childhood, when it was due to adenoids and practically curable.

In the suppurative middle-ear inflammations of childhood, J. H. Coulter, Chicago, (7, Dec. 15) favors free incision of the membrane with the incision carried out along the superior wall of the canal.

He calls attention to the fact that extensive middle-ear disease may be present with little or no evidence in the drum membrane.

The prognosis in acute diseases of the ear in children should never be hasty or unwarranted. It will be influenced by the following conditions:

1. The age and physical condition of the child.
2. The severity of the attack, and if it be a purulent con-

dition, on the seriousness of the concomitant disease which gives rise to the purulency.

3. Whether or not there be brain or sinus involvement pending or threatened.
4. The extent of bone necrosis present when first seen.
5. Nursing.

W. Cheatham, Louisville, (42, Aug. 25) advises *conservatism in the treatment* of acute suppurative inflammations of the middle ear. He reports four cases in which Wilde's incision with bichloride douching, poultices and leeches relieved mastoid symptoms. In threatened involvement of the mastoid cells he favors deep incision of the membrane and wall of the auditory canal.

In a *bacteriological examination* of the pus in a series of cases of mastoid empyema following acute otitis media, by Leutert-Konigsberg (203, Vol. 43, Nos. 3 and 4), micro-organisms were found in the following order of frequency: Streptococcus, pneumococcus, staphylococcus, pyogenes albus and tubercle bacillus. In epidural abscess the same order was found, with the exception of the tubercle bacillus. In sinus thrombosis the streptococcus was usually found alone.

The staphylococcus was usually found alone in empyema, epidural abscess and sinus thrombosis following chronic suppurations.

In cerebral abscess the streptococcus was the principal germ found.

A. O. Pfengst, Louisville, (7, June 9) refers to the mucopurulent fluid formed in the middle ears of new-born infants, which he believes to be physiological.

In many cases of exanthemata of children the ear becomes infected, but drains through the Eustachian tube without causing pain or other symptoms. It is only when the tube becomes occluded that pain, bulging of the membrane and perforation occurs. Without perforation the prognosis is favorable, but with perforation it is very uncertain.

In acute otitis media due to the exanthemata, E. Amberg (17, Dec. 15) suggests that patients be prohibited from lying on the back in order to prevent the passage of infection from the middle ear to the mastoid.

H. P. Bellows (31, Feb.) contributes an article on *ear complications in scarlet fever, measles and smallpox*. The scrofulous and tuberculous type is more liable to aural complications and the intensity of the process is usually in direct ratio to that of the disease causing it. The channels of infection are *a* by extension from the skin, and *b* via the Eustachian tube, and *c* through the general blood channels; the latter rare.

He finds no ear complications following roseola, r  theln or vericella.

W. Milligan, Manchester, (172, Nov. 4, '99) is opposed to perforating the membrane when it can be avoided. He states that the great majority of suppurating middle ears become so only after perforation of the membrane and contamination from the external auditory canal.

M  ller (18, Apr. 12) places a limit of fourteen days on the time which an acute purulent otitis media should be allowed to run without operative interference. If there is no abatement by that time the mastoid should be opened even though there are no indications of the life being in danger. While there may be exceptions to the rule, he believes it a very safe course for the average practitioner.

In acute suppurative otitis media, no matter how severe the symptoms, Lermoyez (82, June 13) advocates simply incising the drum membrane. If the severe symptoms persist another day the mastoid should be opened. If this does not give relief the next day the skull should be opened. At least a day should intervene between each step.

Herman (50, Jan.) reports three cases of acute necrosis of the temporal bone following scarletina complicated with diphtheria.

L. C. Peter (150, Nov.) reports a case of bilateral facial

paralysis occurring after scarlet fever and suppurative otitis media.

Thos. McDavitt (133, Jan. 1) believes that the tonsils are frequently the source of infection in middle-ear disease.

R. Sattler (7, Feb. 10) reports a case of *otitis media, mastoiditis and extradural abscess* in which the inflammation was caused by the removal of a hypertrophied turbinal. Ear complications are much more liable to follow the removal of the posterior turbinal hypertrophies with the galvano-cautery than with the cold snare.

CHRONIC NON-SUPPURATIVE OTITIS MEDIA.

In the beginning of middle-ear disease, even before the patient is aware of any impairment of hearing, P. Bonnier (82, June 6) has discovered that when the tuning fork is held against some remote part of the body the patient hears it more distinctly than it can be heard under similar conditions by one whose ears are normal. Whenever Bonnier has found a positive result from this test he has invariably found a middle-ear lesion with progressive deafness following, unless prompt treatment was instituted.

S. Oppenheimer (3, Nov.) discusses fully the effect of *atmospheric changes* on the hearing in chronic catarrhal otitis media. His conclusions are thus stated:

1. The hearing in at least 70 per cent of cases with chronic catarrhal deafness becomes worse under adverse weather conditions.
2. The degree of impairment of audition, as influenced by atmospheric changes, is determined to a great extent by the location and character of the pathologic process in the tympanic cavity.
3. The morbid alterations most susceptible to barometric variations are those of hyperplasia.

4. In purely atrophic changes in the middle ear weather variations have little or no effect upon the auditory function.

5. Atmospheric influences also impair the hearing by unfavorably affecting catarrhal processes of the upper respiratory tract and Eustachian tube.

6. All things being equal, the impaired audition in chronic catarrhal otitis media is diminished more (under unfavorable weather influences) in those whose general health is below par than in those otherwise healthy.

Dunbar Roy (3, May) bases his *prognosis in chronic catarrhal deafness* upon the following conditions:

1. Age of patient.
2. The pathologic conditions of the nose and naso-pharynx.
3. Duration of the deafness.
4. Condition of the Eustachian tube.
5. Mobility of the drum and ossicles.
6. The general health of the patient.

With reference to the general health he says: "Just as in other organs so in the case of the ear, a run-down condition of the general system makes the prognosis less favorable. Especially is this the case when the patient is of a tubercular diathesis. Pronounced anemia and rheumatism are always unfavorable."

A. Lucae, Berlin, (1, Sept.) reports favorable results from the use of his *pressure probe* in chronic nonsuppurative otitis media. There have been several improvements added since he first called attention to the instrument sixteen years ago. The best results have been obtained in the more recent cases, and the greater the improvement following the first treatment the more favorable the prognosis.

S. H. Large, Cleveland, (111, July) reports six cases of improvement following the use of the electric pressure probe. The appliance used was Lester's modification of Lucae's instrument.

According to Ostman (1, Jan.) *vibratory massage is contra-indicated*:

1. In all acute inflammatory conditions of the sound-conducting apparatus.

2. In all diseases of the sound-conducting apparatus with normal sound conduction. If, however, rigidity of the ossicles exists it would be well to try the massage.

3. It would seem from its mode of operation that vibratory massage is of little benefit in middle-ear diseases, attended with retraction of the ossicles, in simple chronic middle-ear catarrh, or when there is extensive atrophy of the membrana tympani.

Two weeks' treatment should be given before concluding that vibratory massage is of no benefit.

G. Nuvoli, Rome, (2, Feb.) has made a careful study of the effect of the electric-motor massage apparatus on the middle and internal ear in the dead body. Through apertures made in the roof or sides of the tympanum the intratympanic structures might be observed. The vibratory movement of the intralabyrinthine fluid was seen by watching the movement of the membrane in the fenestra ovalis. A tiny hole was also filed into one of the semi-circular canals and the fluid filling it was seen to have the same vibratory motion.

P. J. Mink, Zwolle, (1, Jan.) has experimented with *pneumatic massage under high pressure*. To be effective the massage movements must "exceed the limit of elasticity." A force is necessary to first draw the chain of ossicles tense, in order that the entire sound transmitting apparatus may be brought within the influence of the massage.

To accomplish this the air is first gradually condensed in the external auditory canal and the alternate compression and rarefaction is produced.

Observations showing the result of gradual compression in a series of cases show the following results:

1. Only a low pressure is tolerated by the normal ear without painful sensation.

2. Where the sound-conducting apparatus is impaired, higher air pressure is comfortably borne.

3. The only exception to these rules are the various forms of acute inflammation, exceptional cases of attic suppuration, and atrophy of the malleus.

4. In cases of middle-ear sclerosis constant and increased pressure is always tolerated to a greater degree than in the normal ear.

5. The close relation existing between the degree of sclerosis and the amount of pressure tolerated may frequently help to verify the diagnosis.

As the result of these observations it may be admitted that the painful sensations of this massage procedure may determine the "limit of elasticity" of the sound-conducting apparatus.

In the treatment of otitis and tinnitus following influenza, P. H. V. Hammersley (8, Feb. 17) uses pure oxygen for inflating the Eustachian tube and middle ear. The oxygen is applied by means of a six-foot rubber tube having a nozzle which fits accurately into the Eustachian catheter. Connected with the middle of the tube is a rubber bladder eight or ten inches in diameter when distended. The oxygen is first let into the bladder, then forced through the catheter into the ear. Relief is reported in cases which had been treated with ordinary inflations without relief.

H. H. Leavitt (107, May) reports on the use of *hot air in the treatment of middle-ear catarrh*. He has devised an instrument for that purpose.

The advantages which Leavitt sees in the use of heated air are:

1. Increased comfort to the patient compared with the use of cold-air douching. 2. Increased efficiency, the hot air relieving congestion and promoting absorption much more rapidly than cold air. 3. The superior effect of medicine when introduced into the Eustachian tube and middle ear by means of the heated air.

E. O. Belt, Washington, (72, Dec. 30, '99) advocates the use of the *compressed air apparatus and nebulizer* in preference

to other methods of inflating the middle ear. His objection to the Politzer method is the shock which the patient receives and the danger to the membrane, especially when thinned by atrophic changes. The catheter is liable to produce bruising or abrasions about the Eustachian meatus.

His method of using the nebulizer is as follows :

The naso-pharynx is first sprayed with a modified Dobell's or similar solution, which not only cleans but reduces the turgescence of the mucous membrane, thereby enlarging the caliber of the nasal passages and the Eustachian tube, thus making inflation easier. A pressure of from ten to twenty-five pounds is preferred in the compressed air apparatus. The air is passed through a globe nebulizer, where it can be medicated if desired, and the force and suddenness of the rush of air is modified by the elasticity of the rubber tube through which it passes. The patient is directed to puff the cheeks out, the nose tip is placed in one nostril, and with a Davidson cut-off on the air apparatus the air is allowed to enter one nostril and escape through the other. If the obstruction in the Eustachian tube is marked, a few drops of a 4 per cent cocain solution applied by a cotton applicator will alleviate matters. One of the advantages of this method is, that by quickly opening and closing the Davidson cut-off, vibratory movements or massage can thus be given the drumhead and ossicles. Medication of the middle ear is accomplished by placing the desired medicine in the nebulizer or by injection of the medicated fluid through the catheter.

Fischerich, Weisbaden, (1, Jan.) reports on the use of *pilocarpine injections* in the treatment of 120 well-marked cases of middle-ear sclerosis.

The plan pursued is as follows: A 2 per cent aqueous solution of pilocarpine hydrochlorate is injected into the tympanic cavity by means of a flexible tympanic catheter passed through a metallic Eustachian catheter well up into the tube. He begins with 6 to 8 drops, gradually increasing to 10, 12, 14, 16 drops; the increase of the quantity of the injecting fluid depends on: (1) The stage of sclerosis; (2) the absorption capacity of the

tympanic mucous membrane; (3) the reaction, as evidenced by each individual patient.

Thirty to forty daily injections constitute this course of treatment. In long-standing, chronic cases forty to fifty injections may be made.

The results in many cases have been surprisingly good, even after all other therapeutic measures have failed. The average improvement noted was a two to ten fold increase of the hearing capacity prior to instituting this treatment.

The author observes the following data in the application of this method:

1. Hearing tests should not be made immediately following the course of injections, but after an interim of eight days, when all fluid and moisture in the tympanic cavity has been absorbed.
2. A further improvement in hearing is frequently demonstrable some time after the injections have been discontinued.
3. The improvement following the first course of injections is not always of a definite character, as a later course of such treatment frequently results in further improvement.

C. H. Burnett (1, July) treats *ear vertigo* by removal of the incus. He reports entire relief following the operation in twenty-seven cases. His theory is that the dizziness occurring in the advanced stages of chronic nonsuppurative otitis media is caused by increased intra-labyrinthine pressure due to impaction of the foot-plate of the stapes in the oval window, without corresponding outward movement of the membranes of the round window. The intra-labyrinthine pressure varies with the health of the patient and the condition of the middle ear, hence the paroxysmal nature of the vertigo. He gives the following description of the operation for removal of the incus (17, Sept. 23):

The patient is etherized (local anesthesia by cocain being both inefficient and toxic, according to personal experience) and the external auditory canal and the membrana sterilized by a solution of mercuric bichloride (1 to 5,000) or one of formalin (1

to 1,000). Then the auditory canal and membrana tympani are illuminated by means of an electric light held on the forehead and run by a small portable storage battery made for the purpose of clinical illumination.

Where the membrana is intact, as it is in a case of chronic ear-vertigo due to chronic catarrhal otitis media, the initial incision is made with a delicate knife, beginning close behind the short process of the malleus and following closely the periphery backward and downward until reaching a point below the line drawn horizontally through the umbo of the membrana. This cut is followed by little or no bleeding, as a rule. The flap thus made should be pushed inward toward the promontory by means of a probe armed with a small dossil of sterilized cotton. If there is no bleeding the incus-stapes joint is seen as soon as the flap of the membrana is pushed aside. If there is bleeding, it must be mopped away with sterilized mops on a cotton-holder.

The incus being now in plain sight, it should be gently disarticulated from the stapes by drawing the former outward and downward by means of an incus hook-knife passed behind its long limb. When this is done the long limb of the incus should be grasped by special forceps and drawn very cautiously downward and outward into the auditory canal and then removed entirely from the ear. When this is accomplished the operation is finished. The meatus should be stopped with sterilized cotton and the ear let alone for twenty-four or even forty-eight hours, unless the cotton in the meatus gets moist with blood or serum. If this occur, the cotton should be removed and dry cotton inserted. There is to be no after-treatment in such cases.

In order to demonstrate the feasibility of *re-opening the fenestra ovalis* after osseous ankylosis of the stapedio-vestibular articulation, G. Faraci (2, Feb.) has operated on a number of animals, penetrating the stapes, without noting any serious results and without great loss of hearing power. He reports the case of a girl 15 years old, with suppuration since childhood, in which he removed the malleus and incus and found the fossa ovalis filled with fibrous tissue and the foot-plate of the stapes

firmly ankylosed to the border of the fenestra ovalis. The fossa was cleared of fibrous tissue and a small opening was made through the foot-plate. Some dizziness followed, but was of short duration. Previous to the operation there was complete loss of hearing for the voice, loud noises and repeated attacks of vertigo. One month after the operation the hearing was less than at first, then it gradually improved. Ten months after the operation hearing for the whisper was three meters, C fork 10-50, and C' fork 20-50. The tinnitus had disappeared.

From his investigations, Faraci arrives at the following conclusions:

1. Opening the fenestra ovalis with fracture of the base of the stapes is not a dangerous operation, and if no infection accompanies the procedure there is never purulent labyrinthitis nor any functional disorder.

2. The osseous fragments which fall into the vestibule provoke only a slight inflammatory reaction, with formation of connective tissue, which encapsulates the fragments without compromising the structure or functions of the soft parts in the vestibule.

3. Notwithstanding the greater gravity of the surgical trauma compared with that of stapedectomy, one may observe, as a sequel to the operation, the formation of a delicate membrane which replaces the stapes and has sufficient acoustic power.

4. The resulting auditory power does not differ from that observed in animals after total ablation of the stapes.

5. This operation may be recommended in man when marked deafness is accompanied by serious noises.

6. The operation is advisable whenever the sound-perceiving apparatus remains normal, and when on account of serious pathological conditions of the stapedo-vestibular articulation stapedectomy is impossible.

In three cases of dry catarrh of the middle ear, W. Milligan (2, June) has attempted to provide a path for the transmission of sound waves by removing the stapes, or when that was impossible

by drilling through the foot-plate and the adjacent part of the promontory. In one case the hearing was somewhat improved and marked tinnitus was relieved.

W. L. Ballenger, Chicago, (1, Feb.) believes that *tenotomy of the tensor tympani muscle* for the relief of deafness and tinnitus has a proper place in otological procedures, and that a better understanding of the indications for the operation will bring about a more careful selection of cases and more satisfactory results.

The object of the operation is to sever the tendon and the tensor tympani muscle and thereby overcome the traction upon the handle of the malleus and drumhead. The undue pressure upon the oval window will thus be relieved and the disturbances of hearing overcome. If shortening of the tensor muscle is the only cause of the retraction, the indications for operative procedure are clear and simple. Unfortunately there are other causes of retraction which may act singly or in conjunction with shortening of the tendon of the muscle.

The following clinical symptoms indicate the great traction upon the drumhead from shortening of this muscle or its tendon:

1. Upon inspection the drumhead is found to be retracted, the handle of the malleus rotated and foreshortened, the process brevis prominent, and the cone of light broken or wanting.
2. The effect of the retraction of the malleus and drumhead is to increase the pressure on the oval window of the labyrinth, thereby causing more or less deafness and tinnitus.
3. Politzerization is followed by relief of but short duration. The traction of the tensor muscle rapidly overcomes the effects of inflation. If there were no undue traction upon the malleus or drumhead the air would remain in the tympanum several days before it would become absorbed sufficiently to produce retraction.
4. The ability to focus the ear for varying distances at will, and to select at will any individual voice from a number of voices, all of which are talking at the same time, is normal. This function is due, in part, to the action of the tensor tympani and

stapedius muscles. If this power is lost, there is probably weakness of the tensor muscle, the retraction is due to other causes, and the operation is contra-indicated.

There are four pathological conditions, one or more of which usually produce retraction of the drumhead. They are as follows:

1. Shortening of the tendon of the tensor tympani muscle.
2. Stenosis of the Eustachian tube from swelling, hypertrophy, cicatricial bands, adenoids, or paralysis of the palatine muscles.
3. Cicatricial bands may form in the tympanum and attach themselves to the malleus, drumhead, or mucosa about the margin of the drumhead and thus produce retraction.
4. There are folds of mucous membrane and ligaments extending from the superior external wall of the tympanic cavity to the head of the malleus and to the body of the incus. These may become contracted, and through their action upon the ossicles cause the handle of the malleus to be rotated backward and inward. The drumhead may be thus retracted without the action of the tensor tympani.

There are three indications for the operation:

1. Retraction of the drumhead due alone to shortening of the tendon of the tensor tympani. This is rare.
2. If the focusing or selecting power of the ear is intact, and there is retraction of the drumhead, it is more probable that the operation will be successful than if the focusing power is lost.
3. Politzerization followed by relief of short duration is sometimes a favorable indication. If the tendon is shortened the drumhead is so forcibly retracted that the air is soon forced from the tympanum—perhaps in a few seconds or minutes. Unfortunately, there are other conditions that will cause the inflation to last but a few seconds, namely, adhesive bands and shrinkage of the ligaments and mucous folds arising in the superior and outer wall of the tympanum and attached to the head of the mal-

leus and body of the incus. It is not always easy to determine whether the retraction is thus complicated in its origin.

The contra-indications for the operation are:

1. Retraction due to adhesive bands, shrinkage of the ligaments and mucous folds from the vault of the tympanum.
2. Inflation followed by prolonged relief. This shows the absence of muscular or other tissue-traction upon the malleus or drumhead. The air under such circumstances would not be sufficiently absorbed for several days to produce retraction.
3. Loss of the focusing and selecting power of the ear is a sign of weakness of the tensor and stapedius muscles, hence retraction is not produced by the action of the tensor tympani, but is due to other causes.

The necessary steps of the operation are few and rather simple. A knowledge of the topography of the membrana tympani and the middle ear will enable the operator to perform it with comparative ease and safety. The essential steps are as follows:

1. Test the hearing with the voice—whispered and audible—the watch, the acoumeter and the tuning forks, including the Weber and Rinnè experiments. The acoumeter and watch should be used to determine the focusing power of the ear.
2. Thoroughly cleanse and asepticise the auricle and external meatus. A 1-2000 bichloride solution may be used for this purpose. The meatus should be packed with moist carbolized gauze, a pad applied over the auricle and held in position by a light bandage. This dressing should be left on for twenty-four hours. If these preliminary precautions are observed, and all instruments, sponges and hands of the surgeon are properly prepared before the operation, the danger of middle-ear infection is reduced to the minimum.
3. Having removed the preliminary dressing and irrigated the auricle and meatus with the bichloride solution, the drum-head should be incised parallel with the handle of the malleus. This may be done either anterior or posterior to it. Preference

is usually given to the posterior position as it is usually more accessible.

4. Having incised the drumhead, the hearing should be tested again. The mere incision of the drumhead will often improve the hearing temporarily, and if the tests are omitted it will not be possible to determine how much of the improvement is due to the tenotomy and how much to the preliminary incision of the drumhead.

5. Hartman's curved tenotome is perhaps the best instrument to use. It should be introduced through the incision about 3 mm, the handle of the instrument depressed, and the tendon cut from below upward as the blade is removed.

6. Test the hearing again and determine the amount of improvement resulting from the tenotomy.

7. Apply a dry aseptic dressing for forty-eight hours, during which time the wound will have healed by first intention.

The results of the operation are:

1. The handle of the malleus assumes a more vertical position.

2. The process brevis is less prominent.

3. The drumhead is less retracted.

4. There may be effusion of blood in the middle ear. If so it will be absorbed within a few days or weeks.

5. The chorda-tympani nerve may be severed, but its function usually returns after an interval of a few weeks.

The results as affecting the function of hearing are as follows:

6. Taking the operations as they are generally selected the results are usually negative or temporary. This is accounted for by the difficulty experienced in selecting cases which are due to uncomplicated shortening of the tendon of the tensor tympani muscle.

7. Occasionally the hearing is rendered worse.

8. If the case is one in which the retraction is due to contraction of the tensor tendon alone, the improvement in the hearing and tinnitus is usually marked.

In writing on *physiologic tests* as aids to the differential diagnosis of lesions of the ear which produce deafness and tinnitus, W. L. Ballenger, Chicago, (1, Aug.) gives the following principles:

1. In the normal ear the tuning fork is heard by air-conduction about twice as long as by bone-conduction. Bone-conduction is very much diminished after the fifty-fifth year of age.
2. In lesions of the conduction apparatus the duration and intensity of hearing by bone-conduction are increased.
3. In lesions of the perception apparatus the duration and intensity of hearing by bone-conduction are diminished or entirely lost.
4. In lesions of the conduction apparatus hearing for low tones (infrequent vibrations) is diminished or lost.
5. In lesions of the perception apparatus hearing for high tones (frequent vibrations) is lost.

The status of *surgical treatment of aural sclerosis* is given by R. Botey (2, Oct.).

1. In dry otitis surgical treatment is permissible (though even then it seldom does any good) only when the watch is heard by bone-conduction, when Rinne's test is negative on the diseased side, and when the hearing power is increased, even if only very slightly, by perforation of the membrane.
2. A permanent perforation of the membrane can be made, even when the meatus is narrow. But although slight improvement of hearing is sometimes obtained, yet at the end of two years the patient is as deaf as before the operation, in spite of all adhesions and membranes having been broken down.
3. Mobilization of the stapes in otitis sicca is an absolutely useless operation, because the improvement obtained, when there is any, is quite transitory. It is only justifiable in dealing with results of inflammation. But the improvement, due to the breaking down of adhesions between stapes, on one hand, and recessus and fenestra ovalis, on the other, is not always great or decided.

4. Extraction of the malleus, incus and membrane, can be carried out perfectly through the meatus when this is wide. The results are usually only medium or insignificant in dry otitis. They have disappeared by the end of the year, and may have given place to an increase of deafness.

5. Complete mobilization of the stapes can be done without a preliminary Stacke's operation. A piece of the outer wall of the attic can be removed through the meatus. In otitis sicca the results of this operation are not good, and are rarely permanent.

6. Extraction of the stapes is a bad operation. In sclerosis the results obtained are almost always nil.

7. In following up operative treatment of otitis sicca, modern otology has wandered into a false passage, because the lesions are probably tropho-neuroses and not otitic. Therefore none of the means adopted to modify the organs of transmission has any influence on the progressive affection of the labyrinth.

8. The author's experiments on animals are not applicable to men, because in the former the labyrinth is always intact, while in the latter it is always more or less affected, although with our imperfect means of diagnosis we may be unable to prove the fact.

9. The author further considers that his experiments on animals (1890) proved the uselessness of surgical treatment in sclerosis, for he found that, in spite of all his care to avoid disturbing the region of the fenestra ovalis, the plate of the stapes became thoroughly ossified and united to the fenestra ovalis, and the fenestra gradually receded, owing to a thickening and calcification of the recessus which followed the propagation of an interstitial inflammation of the mucous membrane.

10. Aural sclerosis being almost certainly a tropho-neurosis, with new formation of connective and osseous tissue chiefly in the labyrinthine capsule, around the fenestra ovalis, in the cochlear canal and even in the whorls of the cochlea, the termination of the acoustic nerve being more or less affected, it is evident that surgical treatment is of no use at all, or at least very doubtful, in almost all cases.

In sclerotic otitis media, P. McBride (2, Sept.) doubts if intra-nasal operations can ever be of benefit, while they may, he thinks, do harm.

J. A. Masip (301, Oct., '99) has made a careful study of the *relation of sclerotic otitis media to rhinitis*, and reaches the following conclusions:

1. Sclerosing otitis media developed in patients with atrophic rhinitis with considerable frequency—in one-sixth of the cases, presumably in direct connection with the nasal affection. The cases of middle-ear inflammation form a well-characterized group in the heterogeneous group of middle-ear scleroses.

2. These otitides are peculiar on account of the age at which they appear in children and young people; they occur about the same time in both ears with slight intensity without the paracousis of Willis, and without labyrinthine symptoms or hyperemia of the malleus or Shrapnell's membrane.

3. Some of the scleroses do not appear until a later age; they are, however, to be regarded as a continuation of previous otitides.

4. Patients with atrophic rhinitis may be affected by other kinds of otitis and with greater frequency, independent of the nasal atrophy, as with acute or chronic catarrhal or even purulent otitis.

M. Castex (2, Feb.) reports two cases of diplacusis in aged men with tympano-labyrinthine sclerosis. When the tuning fork was applied to the vertex a single tone was perceived. When held to the ears the patient perceived a difference of a semitone. Unequal mobility of the conducting apparatus was held responsible for the diplacusis.

Bonnier has met with singers who gave their notes with varying certainty, according as their right or left ear was next to the piano.

Lermoyez expresses the opinion the lesion in diplacusis is entirely within the middle ear.

CHRONIC SUPPURATIVE OTITIS MEDIA.

Stetter (80, Sept. 11-18, '99) thinks that otologists of the present time are too ready to operate in chronic suppurative otitis media.

In general the symptoms that justify the *radical operation* are: 1. Marked dizziness with disturbance of gait. 2. Nausea and vomiting. The local symptoms to be considered are. 1. The duration of the disease. 2. The condition of the post-aural region. 3. The frequency of attacks of pain. 4. Facial paralysis. 5. The nature and quantity of the discharge.

In the *non-operative treatment* it is important to find some remedy which will render the thick, tenacious pus more fluid so that the middle ear may be properly cleansed. This is accomplished by the use of potassium iodide solution. When granulations are present they are touched with pure trichloracetic acid. When only a fine granular condition is present the cavity should be packed with gauze, saturated with a ten per cent solution of trichloracetic acid. For the offensive odor he uses menthoxol, a remedy which contains hydrogen peroxid, and in contact with pus gives off oxygen, leaving behind menthol dissolved in alcohol. Haug's chinolin-naphthol gauze is recommended because of its softness and absorbing qualities, and because of the ease with which it can be packed into the meatus, or even into the middle ear when the perforation is of sufficient size.

Stetter sums up his treatment as follows:

1. Careful cleansing of the middle ear by means of tampons saturated in lysol water—not with the syringe—after first rendering the pus fluid by dropping in the following: Sol. Kali Iod. 2 to 100, lysoli puri 20 drops, and following by packing the meatus and middle ear with chinolin-naphthol gauze, at first two or three times daily, less often as the pus diminishes.

2. A fetid secretion is to be combated by dropping in three or four times daily a solution of menthoxol and aqua distil. equal parts, and afterward the use of chinolin-naphthol gauze.

3. Granulations, when sufficiently large, are to be removed by snare or galvano-cautery. When smaller they are to be removed with pure trichloracetic acid. When no isolated granulations can be seen, but rather an even granular thickening of the mucous membrane of the promontory wall, the use of tampons soaked in a 10 per cent solution of the acid is indicated.

4. A periostitis of the mastoid process does not, in itself, unconditionally demand the radical operation. A two-days treatment with Burow's poultices, if ineffectual, may be followed by Wild's incision. If, however, cicatrization does not follow in two or at most three weeks, the wound generally presents a condition of fungus granulation and the middle-ear suppuration shows no tendency to heal. Then should follow the radical operation after Stacke.

C. S. Felt (6, June 23) says a suppuration of the middle ear not kept up by necrosis, polypus or a foreign body is usually chronic because (1) the tissues are lowered in vitality, (2) the septic material is active, and (3) the drainage is poor. Unfortunately the drainage can seldom be improved, but the tissues may be stimulated, and the activity and virulence of the germs lessened, until the suppuration has ceased entirely and the middle ear has returned to its normal condition.

When the discharge is profuse the ear should be syringed with an antiseptic solution two or three times a day, and every day or two the ear should be dried carefully and lightly dusted with some antiseptic drying powder, the best of which Felt believes is iodomuth—a bismuth powder containing twenty-five per cent iodine.

B. I. Barbee, Columbus, O., (195, May) says that when chronic suppuration of the middle ear occurs it is always a sequelae of acute suppuration and that its becoming chronic is due to the lack of treatment, or to improper treatment during the acute stage. If the discharge in chronic suppuration is bloody or streaked with blood and has an offensive odor it indicates caries of the bone.

H. V. Würdeman (7, July 7) protests against the culpable

ignorance of people in general in not recognizing the serious importance to life of prompt treatment of cases of inflammation within the ear. The diagnosis of otitis is so easy, and the treatment is so simple, that every physician should be as expert in its diagnosis and treatment as the specialist. Paracentesis is usually advisable.

J. F. Oaks (17, Mar. 24) outlines his plan of treatment in chronic suppurative otitis media.

Secure and promote asepsis by syringing with a warm antiseptic solution; this is followed by the instillation of alcohol, 50 to 90 per cent. Then the ear is dried and boric acid or nosophen is dusted into the cavity and the canal is packed with sterilized gauze.

If cholesteatomatous masses are present a 10 per cent solution of carbolic acid in glycerin should be instilled. To prevent the re-formation of cholesteatoma the ear should be filled with a preparation of boric acid, 5 per cent, salicylic acid, 2 per cent, in a 50 or 90 per cent solution of alcohol, according to the tolerance of the patient.

Small perforations should be enlarged. Granulations are removed by the use of ferri perchlor, chromic acid, alcohol, or the snare or curette. Necrosis of ossicles or tympanic wall demands operations more or less heroic, according to the extent of the necrotic process.

When the mastoid is involved the earlier operated the better. Oaks finds antinosine, the sodium salt of nosophen, of great value in ear suppurations and as a cleansing agent in the nose previous to tympanic inflations.

O. A. LaCrone (59, Sept.) says that indiscriminate syringing of the ears in suppurative otitis media is now almost universally and very justly condemned.

The possibility of forcing infected material into the antrum should never be forgotten. It is far better practice to mop out with dry cotton all we can, and then to carefully cauterize the parts involved, or to throw into the tympanic cavity a few drops of a

one or two per cent solution of nitrate of silver with a syringe which has a long bent needle point and allows us to pass it through the perforation in the drum. To cauterize the point of ulceration, to carefully curette a carious surface, to apply to a pocket of pus a disk of iodoform and alum, often affords brilliant results. Failures, when they occur, serve to convince us that the disease is more extensive than we anticipated, and remind us of other routes by which the attack must be made.

To preserve hearing unimpaired, if possible, should be our constant aim, but there are times when the spread of infection far overshadows hearing and justifies the sweeping away of part or all of the auditory apparatus.

G. L. Richards, Fall River, Mass., (70, May 19) favors *capillary drainage* in the treatment of both acute and chronic suppurations of the middle ear. When the patient cannot come or be brought to the office sufficiently often for this treatment to be effective he teaches an attendant to cleanse and pack the ear with absorbent cotton.

Absorbent cotton does not drain as well as gauze, hence must be changed oftener. The cotton is twisted on an applicator and inserted deep into the canal, when by a backward turn the instrument is withdrawn, leaving the cotton in position. Syringing the ear at home is never advised.

E. B. Gleason (1, Mar.) reports four cases of chronic otorrhea cured by the use of *protargol*. Two of the cases are given in full as reported.

1. A robust man of fifty years. Remains of the drum-head and malleus had been removed about two years before. In spite of repeated curettement of the accessible portions of the attic and the use of chromic acid fused on a probe, and instillations of alcohol, the ear continued to secrete a scanty, fetid discharge. After one injection of *protargol* the ear became absolutely dry and the visible parts cicatrized.

2. A man of thirty-five years. He had had otorrhea for twenty years. Polypi had been removed from time to time from the attic during the last year or more. The ear continued to

discharge varying quantities of pus. The patient was somewhat irregular in attendance. He refused operative procedures except the removal of polypi. The ear became dry and cicatrized after two applications of protargol.

The method of application was as follows: In case of prolonged otorrhea a hypodermic syringe full of a five per cent solution, by means of a Blake's cannula, was injected as high up in the attic as possible. The parts then were massaged with Siegle's pneumatic speculum in order, if possible, to force a portion of the solution into more distant parts than could be reached by the syringe. The ear finally was dried by means of absorbent cotton. Before using the protargol the middle ear had been cleansed with the aid of Blake's cannula and dried in the usual manner.

The use of *powdered acetanilid* in chronic suppuration of the middle ear is advocated by George F. Libbey (70, Oct., '99). The ear is first cleansed with cotton then peroxide is used, after which the ear is wiped as dry as possible. Finely powdered acetanilid is then dusted into the ear. The process is repeated daily.

Pewnizki (60, Oct., '99) reports favorable results from the use of *ferripyrrin* in forty-five cases of purulent otitis media. Ferripyrrin is a combination of ferrun sesquichloratum and antipyrin. It is a red powder soluble in water. It is used in the ear in from 1 to 20 per cent aqueous solution.

The favorable action of ferripyrrin is certain but depends upon the character and severity of the disease. Its action is weakly astringent, disinfectant and resorptive.

W. C. Phillips (3, Aug.) makes a further report on the use of *pure carbolic acid* in the treatment of chronic suppurative otitis media and in cases of burrowing of pus and the formation of a sac. He leaves the acid in contact with the tissues from thirty to sixty seconds before applying alcohol as an antidote. He believes that pure carbolic acid with alcohol as its antidote is of great value in mastoid surgery.

The indications for *surgical intervention* in the treatment of otorrhea, as stated by Paul Range (184, Jan. 10) are: 1. When

no improvement is obtained by antiseptic treatment. 2. When the probe reveals the presence of osseous lesions. 3. When cholesteatoma is detected or suspected. 4. When hearing is completely lost, so that no further damage can be done in this direction. 5. When there is the slightest symptom pointing to encephalic complication.

E. B. Dench (6, Sept. 9, '99) reports twenty-six cases in which he has divided *post-suppurative adhesions* about the stapes. The most frequent location for adhesions is between the posterior crus and the corresponding wall of the oval niche. Cocain or eucain and suprarenal extract anesthesia is usually sufficient. Any remaining portions of the drum membrane which obscure the field of vision should be removed. The knife is made to pass around between the stapes and the wall of the oval niche, separating any adhesions which may be found. Mobilization of the ossicle by means of the cotton-tipped probe is also advisable. Careful functional examination should be made before the operation is undertaken, and the examination, both for audition and for the lower tone limit, should be repeated from time to time during the steps of the operation.

If the operation has been aseptic it is only necessary in the after treatment to occlude the meatus with a pledget of sterilized cotton, which should be changed daily, and at the same time the canal may be wiped out with sterilized cotton. The tympanum usually becomes dry after three or four days. Of the twenty-six cases improvement was shown in twenty-five, while in one case no improvement followed the operation.

R. C. Myles (128, Feb.) reports a case of *removal of the cochlea and parts of the semicircular and facial canals* through the external auditory canal.

Necrosis of these parts occurred in the course of long continued suppuration.

In *chronic suppurations of the attic*, Meniere (81, Oct., '99) removes the ossicles and then cleanses the attic with some caustic solution, such as chloride of zinc.

R. Lake, London, (8, Mar. 10) reports fifty cases of *removal*

of the remains of the drum-head, the larger ossicles, and the outer wall of the attic, for chronic purulent otitis. The indications for this operation are enumerated as follows:

1. Intractable disease of the attic with a perforation in Schrapnel's membrane, especially if accompanied by definite caries or deafness.
2. Intractable disease with perforation of the posterior superior quadrant.
3. Intractable disease with considerable destruction of membrane in any other situation.
4. Residual deafness after suppuration without nerve deafness. Any more serious condition becomes a case for the more radical operation, but in the foregoing there is justification for attempting to avoid more serious measures.

The only variation from the operation as usually described is the thoroughness with which the external wall of the attic is removed.

Of the fifty cases operated forty-two were cured. In twenty-one the hearing was improved. Twenty-nine of the cases were right ears, and twenty-one left ears. The average age of the patient was 22.4 years, and the average duration of the disease was 13 years.

Politzer (2, Feb.) reports a case of *accidental extraction of the stapes*, during operation for necrosis of the temporal bone, in a child two and one-half years old. The death of the child several weeks afterward afforded an opportunity to examine the auditory apparatus post-mortem. Histological examination of microscopical sections showed the following: In sections which passed through the niche of the fenestra ovalis and vestibulum the inner wall of the tympanic cavity was found covered by a granulated mucous membrane composed of round cells. This same granulation mass filled the niche of the fenestra ovalis, and, passing from there through the labyrinth window into the vestibulum, filled out the whole cisterna perilymphatica. This granulation tissue was firmly fixed to the utriculus and surrounded it on all sides. The utriculus itself showed inflammatory thickening. In

the horizontal semicircular canal the connective tissue network between the osseous and the membrane canal was in a state of inflammatory infiltration, invaded by round cells and intersected by dilated vessels.

More conspicuous changes were found in the cochlea. Here the inflammatory proliferation had entered both cochlear turns, reaching as far as the top, principally, however, in the scala tympanica. It started mostly from the inversive of the cochlear canal and from the lamina spiralis, and showed the same histological structure as the connective tissue proliferation in the vestibulum.

This case, which Politzer believes is the first in which the labyrinth was examined histologically after the extraction of the stapes, is of value in that it shows the danger of the inflammation spreading to the internal ear when the stapes is removed during a suppurative otitis media.

Politzer has removed the stapes from the ears of rabbits and birds, and when, afterward, the ear was examined histologically, no pathological changes could be found in the labyrinth. The bony foot-plate of the stapes was sometimes reproduced. The animals, which were deaf immediately after the operation, afterward showed some return of the hearing faculty.

In sclerosis of the middle ear causing fixation of the stapedial foot-plate, no improvement followed its extraction. The same bony proliferation which caused the fixation, after removal of the stapes, closed the fenestral ovalis.

That care should be exercised in the removal of *granulations* from the middle ear is mentioned by O. A. LaCrone, Kalamazoo, (59, Sept.)

When the tegmen tympani is eroded the dura sometimes throws out a mass of granulations which more or less completely fills the middle ear. The removal of this mass without the thorough removal of all infective material would greatly increase the liability to cranial complications.

After removing *fungus growths* from the middle ear by means of the snare or curette, Bonain (11, July 21) cauterizes the

raw surface with zinc chloride, either pure or in strong solution. The middle ear is then packed with a strip of iodoform gauze which is changed every second or third day until the discharge ceases. Twenty-one days has been the average time required to effect a cure.

C. Zimmerman, Milwaukee, (128, Aug.) describes *cholesteatoma of the ear* as a globular tumor of the size of a grain to that of a pigeon egg, of bluish-white or yellowish color, and a lustre like mother-of-pearl. Its cortex shows the structure of epidermis, and its substance consists of products of the latter, viz., cornified scales, which form concentric lamellæ, like an onion. The central portions frequently contain cheesy detritus from decaying epithelia and thickened pus, and between the lamellæ are found crystals of cholesterine, fat granules, and micro-organisms; sometimes giant cells. Its seat of predilection is the middle ear, chiefly the attic, aditus ad antrum, and the mastoid process.

The treatment consists in removing the cholesteatomatous masses, and in healing the purulent otitis media. This may be done from the meatus, if the cavity is only small and can be inspected. If not, the whole middle ear and mastoid cavity have to be opened, so that the cavity can be examined all over and thoroughly cleansed.

The operation is only the commencement of the treatment. The changes of dressing are of paramount importance for procuring epidermization of the cavities. The developing granulations have to be dealt with in a proper way by tamponade and, if necessary, by cauterization. If the antrum is covered with epidermis, the postauricular opening may be allowed to close, so that finally the whole cavity is nothing but an extended ear canal. In cholesteatoma, which has a great tendency to relapses, it is advisable not to close the postauricular opening, so that the cavities always remain open for inspection, and can be kept open.

A case of *fibroid tumor of the tympanum* is reported by E. W. Fleming, Los Angeles, (1, July).

The patient was a man of forty years of age. The tumor began in the tympanum and rapidly extended outward along the

external auditory canal. In twelve days after the growth was first noticed it had reached the plane of the cartilaginous meatus. The canal was cleared by means of the cold wire snare and galvano-cautery, but the growth rapidly recurred. Three months after its first appearance a radical operation was undertaken for its removal. An incision was made over the mastoid parallel to the insertion of the auricle, together with a forward dissection of the integuments from the underlying periosteum and division of the fibro-cartilaginous tube. This detached the auricle and the cartilaginous meatus posteriorly and gave direct access to the osseous portion of the external auditory canal. It was now clearly seen that the growth filled the tympanic cavity and was attached to it as well as to the posterior wall of the bony canal. There was no evidence of the drum membrane. The mass was surrounded with a loop of number five piano wire and deliberately excised. The base, which apparently occupied the posterior aspect of the tympanum, was carefully scraped and a thermo-cautery cautiously applied over the bleeding surfaces. The operation was concluded by lightly packing the meatus, the periosteum replaced and retained by absorbent sutures, the auricle stitched into position and an antiseptic dressing applied over the ear and mastoid.

With the exception of excessive granulations in the meatus, which required curettement, the patient made a satisfactory recovery.

Of the conditions found five months after the operation, Fleming writes: With the exception of a small sinus, through which issues stringy muco-pus, the external auditory canal is closed. The obstructing tissue appears to be fairly organized, granulation tissue having none of the characteristics of the original growth. Small pouting granulations at the orifice of the sinus. Patient is now gaining strength rapidly and says he has at no time experienced ear pain or other head symptoms.

The special points of interest in this case appear to be: First, the nature of the tumor; second, its extreme vascularity

and rapid growth after partial removal, pointing to possible malignancy, and third, its unusual location.

C. R. Dufour, Washington, D. C., (128, Feb.) reports very severe *hemorrhage* following the removal by torsion of a myxofibroma with attachments in the floor of the middle ear. He accounts for the hemorrhage on the theory that the growth involved the small branch of the carotid artery which is distributed to the floor of the middle ear, that the walls of the artery partook of the fibrous character of the growth, and that when the latter was removed the vessels gaped instead of closing.

The hemorrhage was controlled by packing the canal with iodoform gauze. Four days later the gauze was removed without recurrence.

E. B. Gleason (7, Feb. 3) reports a case of *nevus of the tympanum*. The growth appeared to spring from the posterior wall of the middle ear.

Tissot (81, Oct., '99) reports an unusually large *cholesteatoma of the temporal bone* following suppurative otitis media.

A. A. Gray (8, Apr. 21) reports good results from the use of equal parts *alcohol and anilin oil in the removal of cholesteatoma*. This combination softens the masses and aids in breaking them down, probably by its great power of dissolving fats and oils.

In the treatment of chronic suppuration of the middle ear and in the removal of granulations he uses the same remedies. The beneficial effect is due principally to their dehydrating property. For purposes of anesthesia he adds 5 to 10 per cent cocaine to the combination.

N. H. Pierce, Chicago, (3, Aug.) reports a case of *granuloma of Prussak's space* simulating caries. The patient was a farmer aged thirty-five, without specific history. His only complaint was deafness. There was no apparent discharge, no marked pain and no tinnitus. The watch on the right side could be heard at a distance of three inches, and on the left at three feet. Lying over the short process of the malleus on the right side and to a certain extent obscuring the membrana flaccida was

a cauliflower-like mass the size of a small pea. The mass which protruded through the membrana flaccida and was attached by a small pedicle. It was at first suspected that the case was one of necrosis of the incus, but the lack of inflammation in the parts and the meagerness of the discharge made this seem doubtful. A curette introduced through the opening brought out gritty particles which, under the microscope, were found to be organic and soluble in hydrochloric acid. The cavity was packed with a little gauze, and the patient made a good recovery.

It is important to differentiate the cases in which gritty particles are found in granuloma from true osseous necrosis.

R. A. Wright (6, Dec. 8) says when Prussak's space is diseased that early recognition and appropriate treatment are necessary to prevent mastoid complications.

In *necrosis* from chronic suppurative otitis media Baratoux (207, Sept.) believes the site of the perforation indicates accurately the location of the necrosis. He would remove the ossicles before doing a mastoid operation for chronic suppuration unless there was positive evidence of mastoid caries.

P. F. Glidden (7, Sept.) states that he has seen characteristic *mucous patches* in the middle ear. Specific middle-ear diseases, whether mucous patches or gummata, are amenable to specific treatment. When obscure ear troubles are not improved by the ordinary measures he advocates a thorough trial of specific remedies.

M. A. Goldstein, St. Louis, (1, July) reports a case of *primary tuberculosis of the ear* in a lady of thirty-two years. The patient gave a history of a mastoid fistula during childhood, and an intermitting discharge ever since. A Schwartze operation was performed. Some of the cheesy masses removed were found to contain almost pure cultures of tubercle bacilli. Five months afterward a more extensive operation and a thorough curettement of the tympanum, antrum and mastoid was done. At the time of reporting the case, five months after the second operation, the post-auricular sinus had nearly closed; discharge from the external auditory canal had entirely ceased; the general condition of

the patient was constantly improving and no secondary tubercular involvement could be discovered after careful and repeated physical examination.

Haike (203, xlviii, p. 228) believes that whenever the foot-plate of the stirrup is necrotic it is the result of a tuberculous process.

He also finds (13, No. 36) that when the stapes is removed, whether accidentally or intentionally, the amount of dizziness resulting is in direct proportion to the amount of force necessary to detach it.

Urban Melzi, Milan, (2, Jan.) reports a case of *retropharyngeal abscess* occurring in the course of a suppurative otitis media. The patient was a child of two years. The symptoms as they occurred were fever, loss of appetite, pain in the throat, troubled sleep, snoring, stiff neck and swelling and redness of the submaxillary region.

After repeated attacks of suffocation the throat was examined and an enormous retropharyngeal abscess was discovered. A bacteriological examination showed the same bacteria in the pus from the abscess and from the middle ear. The tumefaction in the pharynx and in the submaxillary region disappeared simultaneously with the stopping of the middle-ear discharge. Careful search was made for other causes for the abscess, but none could be found. In the literature of the subject Melzi found reports of twenty-two other cases of retropharyngeal abscess of auricular origin.

W. A. Martin (1, Feb.) reports a case of *chronic suppuration in which the patient had been wearing a patent ear drum*. The ear was filled with granulations. Martin treated the granulations, and substituted a cotton drum dipped in antiseptic oil for the patent drum. Without artificial assistance the patient could hear a one-meter watch on contact and a low conversational voice at one meter. With the cotton ear drum hearing was twenty-five centimeters for the watch and four meters for the voice.

Disinfection of Auditory Canal and Tympanum.—The impor-

tance of thorough cleanliness and strict asepsis, both in tympanic operations and in the treatment of septic conditions, is emphasized by Urban Pritchard (2, Mar.). In nonsuppurative cases for operation, such as the removal of exostoses, removal of ossicles, division of old adhesions, and for paracentesis of the membrane for fluid in the tympanic cavity, he uses the following method:

An hour or so before operating the meatus is well syringed out with 1 in 40 carbolic acid solution, and afterward mopped out with 1 in 20, until it is quite clean so far as the eye can judge. The whole auricle is then well scrubbed with 1 in 20. A strip of double cyanide gauze, well wrung out in 1 in 20, or in 1 in 40, in order to get rid of the irritating soluble cyanides, and twisted so as to form a loose cord, is lightly packed into the meatus, and a pad of similar gauze is applied over the auricle and kept in place by means of a bandage.

When the patient is under the anesthetic the bandage and all the gauze is removed, and the operation itself is performed with all the strict antiseptic precautions that are used in ordinary surgery. When the operation has been completed the ear is dressed with strips of gauze in the meatus, and pads of the same in the concha and over the auricle, secured in position by a bandage.

In operating where suppuration already exists, such as operations for polypi or granulations, curetting carious spots, removal of necrosed bone, etc., the following method is employed:

The ear should be syringed out with 1 in 40 (or stronger) once or twice a day for about a week previous to the operation, instead of only once, as is directed in dealing with nonsuppurative cases. Indeed, throughout the whole time—before, during and after the operation—the antiseptic purification must be most thorough. Syringing with 1 in 40 has to be repeated after the operation, when frequently epidermic caseous masses, etc., may be brought away which could not be dislodged before.

It is not always possible nor is it essential to thoroughly sterilize the middle ear, for if we can sufficiently reduce the dose

of septic poison, the natural sterilizing power of the tissues will be enabled to cope successfully with the enemy.

If the case is a very septic one, as in caries, the strip of gauze should be dipped in 1 in 20 carbolic solution and tipped with powdered iodoform. Usually a little powdered iodoform is put in a pool of the 1 in 20 solution, so as to form a paste, and then the end of the gauze strip is dipped into it.

The dressing in these suppurative cases requires to be changed more frequently; at first, usually at the end of twenty-four hours, and afterwards about once in two days, according to circumstances. Whenever the tip of the gauze is covered with discharge the dressing should be renewed daily, the ear being syringed out each time with 1 in 40; if the pus is fetid, the iodoform should be used each time.

Granulations and polypi operated on in this way, especially when the carious surface is also curetted, yield excellent results. Frequently the discharge ceases from the time of the operation, and the whole heals within a week or ten days.

In the treatment of chronic otorrhoea the ear should be purified as already described, using iodoform if the discharge is very offensive. The strip of gauze should be packed down so as to fill up the remainder; no bandage is required. The advantage of having the gauze in two pieces is obvious, for otherwise, if the patient fidgets out the end, the deeper portions would be disturbed.

In purifying for otorrhoea it is also important to purify the auricle, which should be wiped dry with cotton-wool or a clean cloth after the second piece of gauze has been introduced.

MASTOID DISEASE.

Pathology.—Hasslauer (19, June, '99) names the following possible routes by which an inflammatory process may spread from the tympanic cavity to the surface of the mastoid:

1. Through the incisura rivini to the periosteum of the

meatus, and thence by the continuity of tissue to the mastoid periosteum.

2. Through the antrum to the cortical cells, and thence through a gap in the cortex to the mastoid periosteum. Such gaps are very frequent in children.

3. Through the squamoso-mastoid fissure, which is often only partly ossified and occupied by connective tissue continuous with the periosteum and deeper layers of mucosa of the mastoid cells and tympanum.

4. Through numerous fine channels transmitting vascular twigs.

5. Through gaps and fissures in the posterior wall of the meatus, especially the tympano-mastoid fissure of Gruber, which, when persistent, transmits vessels and strands of connective tissue connecting the external meatus with the mastoid cells, whence the squamoso-mastoid fissure provides a way to the external surface of the mastoid process.

6. Through defect of the squama just above the spina supra-meatum. This connects the periosteum of the squama with the mucous membrane of the tympanum.

7. Through defect in that part of the squama which helps to form the mastoid process, thus opening communication with the posterior part of the tympanum (found in 2 per cent of 200 skulls).

R. Payne (23, Sept.) likens the mastoid antrum to a *drip cup for suppurations* of the upper part of the middle ear. When there is a suppurating, necrotic process going on in the upper part of the middle ear and in the ossicles themselves, part of this pus finds its way out through the external canal, but when the patient lies down gravity favors the direct passage of the pus back into the antrum of the mastoid and subsequently into the cells, so that when once a suppurative process has been of sufficient duration to involve extensively the entire attic and ossicles, and the pus has been drained into the mastoid antrum, it is not possible to cure the condition without going into the mastoid antrum and cleaning it out.

Though many of these cases may run on indefinitely without urgent symptoms arising, if an examination of the pus shows the streptococcus present, extensive destruction of bone may be expected to follow; if, on the contrary, only the staphylococcus is present, the indication may not be so urgent.

M. Lermoyez (82, May 12) says that pus may escape from the mastoid in one or more of four different ways:

1. Through the normal osseous fissure. In these cases Wild's incision will effect a cure.
2. Through the vascular system.
3. Superiosteally.
4. The pus may break through the surface of the mastoid bone.

Pus, after escaping from the mastoid, may burrow in five directions:

1. Outward through the skin.
2. Below through the cellular tissues of the neck, usually through the sterno-mastoid muscle.
3. Through the auditory canal.
4. Through the skull.
5. Into the lateral sinus.

Much is yet to be learned before we can judge accurately of the depth of the inflammatory process.

Muck (128, Aug.) notes the light rose color of the bone seen in a mastoid operation on a rachitic child.

E. F. Snydaker, Chicago, (128, Dec.) states that there is a difference of opinion among otologists as to the *propriety of opening the antrum* in cases of acute empyema of the mastoid cells.

After quoting the opinions of Politzer, Schwartze, Hessler, Zaufal, Lucae and others, he concludes that there are two questions to be answered in each individual case: 1. Is the antrum drained? 2. Has it undergone such pathological changes that it is a focus of infection? If there is a doubt on either of these two questions, the antrum should be opened, and since, without some exploration, at least, it is impossible to say with absolute certainty what the condition of the antrum is, and of this condition every conservative operator, bearing in mind that the antrum

is always more or less involved in purulent middle-ear disease, must convince himself; but the first opening should be made exploratory, and if he has convinced himself that the antrum is not the seat of danger, then he should at once desist from further disturbing the parts.

Abortive Treatment.—In the abortive treatment of mastoiditis J. F. McKernon (1, Nov.) has tested the *comparative value of heat and cold*. There were ten cases treated, four of whom were children. The heat was applied by means of hot water passing through the Leiter coil. He had found that the tenderness had been but slightly diminished, but on substituting ice water for the hot water the tenderness had quickly subsided. The ten cases were not selected, but were taken as they presented. He has since used the hot-water treatment in fourteen other cases, and the results have been even less favorable. The further treatment he advises is to enlarge the opening in the drum, if sufficient drainage has not been secured by nature, and in addition, where there is marked swelling or prolapse of the superior and posterior canal walls, he uses what some have described as “an internal Wilde’s incision.” Absolute rest is enjoined, and the ice coil is applied firmly to the mastoid process and bound in place. The ear is irrigated at intervals of two or three hours with warm bichloride solution 1 to 4,000. If after twenty-four hours of such treatment the tenderness over the mastoid has not entirely disappeared, the cold coil is reapplied for twelve hours more. The majority of these cases can be discharged cured within a week. In a very small percentage the tenderness persists after the thirty-six hours, and then if the temperature is less than 100 degrees F., he reapplies the coil for another twelve hours. If there is still no improvement, the classical mastoid operation should be done. As a rule, in children under three years of age, the ice coils should not be applied after thirty-six hours, but if the tenderness has not subsided in a few hours after its removal, the mastoid should be operated upon. He is of the opinion that if the discharge were examined bacteriologically at an early stage it would possibly serve as a trustworthy guide in making the prognosis. If strepto-

cocci are present in abundance, 80 per cent of the cases will ultimately require operation. In a series of fifty-seven cases of acute mastoiditis examined in this way, forty-two showed streptococci in abundance, and of this number thirty-nine required operation.

In the discussion following the paper it seemed to be the prevailing opinion that cold is more effective than heat, but that it is liable to mask the symptoms. An early bacteriological examination should be made, and if streptococci are found in abundance an operation is usually necessary before the case recovers.

B. L. Graddy, Nashville, (3, Aug.) believes that when pus-producing micro-organisms have invaded the mastoid cells, the application of neither heat nor cold will have any effect in arresting the suppurative process.

S. S. Bishop (174, Vol. 2, 10th Series) reports six cases of mastoiditis. One of the cases was a girl 12 years of age, who, after scarlet fever, had rheumatism, nephritis, pericarditis, otitis media, and mastoiditis. Recovery followed operation.

In two of the cases recovery followed the use of the ice-bag. Bishop says: "When pus is not already present, disintegration of tissue and the formation of pus may be prevented. After ulceration of the mucous membrane lining the mastoid cells has occurred, or after pus has accumulated between the periosteum and the cortex, ice is inadequate to arrest the progress of the disease, and an operation is the only safe and curative procedure."

Indications for Mastoid Operation.—When to open the mastoid in chronic otitis media is a subject which continues to attract much attention. Several otologists have given lists of symptoms and conditions which demand more or less radical operation.

C. A. Ballance (2, Apr.) believes that when the following conditions are present during chronic suppuration there should be no question as to the necessity of a radical operation: 1. Optic neuritis. 2. Attacks of malaise with fever and headache. 3. Vomiting. 4. Vertigo. 5. Atresia of the meatus. 6. Pain in the ear. 7. Sudden onset of facial paralysis. 8. Mastoid abscess or tenderness. 9. Carious fistula over the mastoid. 10.

Cholesteatoma. II. Polypoid granulations springing from a demonstrable carious focus in the tympanum or attic.

There is another class of chronic suppurative cases having no mastoid or other signs, in which all minor treatment (removal of the ossicles, antiseptic dressing, etc.) fails, and the discharge, offensive or odorless as the case may be, persists. In these cases, Ballance thinks wide experience is the best guide; no rules can be given.

In such cases, Lucas says: "When in doubt, operate." Dundas Grant thinks the responsibility is greater in deciding against than in deciding in favor of the operation.

Sir Wm. Dalby (2, Apr.) says the necessity for the radical operation would seem to exist in somewhat the following manner:

1. Undoubtedly in cases where septicaemia has commenced.

2. Undoubtedly in cases where there is dead or carious bone in the tympanic cavity, accompanied by ominous symptoms, often repeated.

3. Whenever there is evidence of mastoid disease of long or short standing.

4. In a certain proportion of cases where there is evidence of dead or diseased bone, but a very doubtful history of ominous symptoms.

5. In a certain proportion of patients with intractable otorrhoea, in whom no bone disease can be detected, and in whom no history of ominous symptoms can be obtained.

6. There is a small number of cases which undoubtedly die from septicaemia when the bone is not affected at all—some of them in which the discharge has existed for many years, and others in which septicaemia sets in a few days or weeks only after the commencement of the inflammatory action within the tympanic cavity.

A. E. Cumberbatch (2, Apr.) gives the following groups of cases in which he believes the complete mastoid operation is indicated:

1. Those cases in which the frequently recurring discharge is invariably preceded by malaise, slight headache, rise of temperature, and occasionally by mastoid tenderness and discomfort.

2. "Spoilt ears" which, having given no trouble for years, suddenly develop marked symptoms of labyrinthine vertigo, due to either the spread of inflammation to the labyrinth or to pressure from some accumulation in that region.

3. Cases of intermittent discharge, with masses of sodden epidermis in the meatus, often hiding small granulations, and where syringing constantly removes white shreddy patches, and the usual methods of treatment have failed to effect a cure.

4. Cases of periodic attacks of mastoid pain, commencing after all signs of active mischief in the ear have ceased, and where, by the exclusion of superficial neuralgia, it is possible to determine the existence of sclerosing otitis.

In the following groups of cases radical measures are inexpedient or should not be hastily undertaken :

1. A group where the whole or greater part of the membrana tympani has been destroyed, and the mucous lining of the tympanic cavity is greatly hypertrophied (polypoid, in fact), but there is no obvious bone disease.

2. A group in which there is frequent recurrence of the discharge on slight provocation, although the discharge on each occasion is easily arrested. In some the perforation of the membrane is permanent; in others it closed as soon as the discharge ceased.

3. A group in which the question of operation is difficult to decide, and should not be too hastily answered in the affirmative. These are cases of discharge from both ears, in which the hearing is excellent and there are no symptoms for operative interference beyond the discharge.

James F. McCaw (6, Dec. 30, '99), in writing on the *importance of early surgical treatment of mastoiditis*, says there are few diseases the family physician is called upon to treat in which

the responsibility for prompt and proper advice is so heavy as in mastoid involvement following tympanic inflammations. He believes the physician who fully realizes the dangers to which aural diseases, both acute and chronic, may lead, is more apt to give proper advice than one who is accustomed to regard them as troublesome sequelae beneath his dignity to notice.

While some of the acute cases of mastoid involvement subside without operation, there is one symptom—bulging of the posterior superior canal wall—which always indicates pus in the mastoid, and is a positive indication for operation. In mastoiditis following chronic otorrheas, there is no ground for discussion. The only thing to do is to deal with it radically and at the very earliest moment, for it is the danger signal, and if unheeded is sure to lead to disastrous results. For a physician to stand by and wait for the catastrophe of which he has been forewarned is little short of criminal negligence.

In the choice of the method of the operation, McCaw uses the Stacke operation in chronic cases, while in the acute cases simply opening the mastoid cells and antrum is usually sufficient.

Heine (80, Sept. 3) finds *mastoid suppuration in elderly people* especially dangerous, because of the unusually thickened condition of the mastoid cortex and the consequent tendency toward the deeper extension of the disease.

He believes that when a patient over 40 years of age has persistent chronic suppurative otitis media, no time should be lost in operating. Four illustrative cases are reported.

In an article on *mastoiditis in children*, Meniere (128, Oct.) concludes as follows: 1. Mastoiditis following acute purulent otitis is more rare in children (eight in 1,103 cases) than in adults (thirty-three in 438 cases). 2. Mastoiditis complicating chronic purulent otitis is frequent (356 in 1,748 cases). 3. The mastoid process is formed during the first years by the slow absorption of cancellous bone; the slow, painless, and insidious progress of affections of the mastoid cells may be explained. 4. Caries attacking the cells from without inward without lesions of the tympanum is not rare in young patients (thirty-two cases).

5. The extension of mastoid caries from the interior to the exterior without pain or symptom is frequently observed in predisposed young subjects where the otorrhoea has not been properly treated. 6. Caries followed by necrosis and the formation of sequestra is not rare among children (thirty-four in 1,748 cases). The sequestra are readily cast off, without any neighboring complication in the course of the disease. 7. Complications are rare in children, as extra- or intra-dural abscess, sinus thrombosis, etc. (none in 2,651 acute and chronic cases). 8. Notwithstanding the benignity of the diverse mastoid complications in children, if proper care, methodic cleansing, etc., are without avail, and do not check the progress of the suppuration, recourse must be had to (*a*) removal of the ossicles which are carious and keep up the discharge; (*b*) if this is not sufficient, the mastoid should be opened, and, if necessary, combined with exposure of the middle ear. Such a radical procedure is necessary because experience has shown that mastoid infection occurs insidiously and slowly and does not give any diagnostic symptoms.

E. L. Holt (192, Oct., '99) describes a class of cases which do not show the ordinary symptoms of mastoiditis, but when operated the conditions found in the mastoid have always justified the operation. The patients are subject to attacks of earache, accompanied by chills and fever, but no discharge. In such cases pain on deep pressure over the mastoid, with redness, swelling and sensitiveness in the posterior wall of the auditory meatus next to the membrane, always indicates the necessity of a mastoid operation.

H. Gifford (7, Oct. 6) makes it a rule in suppuration of the middle ear, with or without mastoid symptoms, if no improvement takes place in two weeks, to operate. He regards the presence of discharge with sleeplessness alone as showing sufficient cause for operation.

Hillard Wood (100, Nov. '99) gives four *general indications* for opening the mastoid cells.

The classification follows very closely that of Schwartze, and is as follows:

1. In acute inflammation of the cells, with retention of pus, if edematous swelling, pain and fever do not subside after antiphlogosis and free incision.
2. In chronic inflammation of the mastoid process, with subacute (periosteal) abscesses or fistulae in the mastoid.
3. With a sound cortex of the mastoid, on account of cholesteatomata or purulent retention in the middle ear, which cannot otherwise escape, and with which symptoms arise showing that the life of the patient is in danger, or when a congestive abscess has formed in the upper posterior wall of the meatus.
4. When the mastoid appears healthy and there is no pus in the middle ear, but when the mastoid is the seat of long-continued and unendurable pain which other means fail to relieve.

M. D. Lederman, New York, (6, Mar. 17) calls attention to the failure of external symptoms to indicate the extent of the lesion within the temporal bone. When the mastoid cortex is unusually condensed the suppurative process is forced to follow paths of lesser resistance.

When the cranial cavity becomes involved it may be (a) by extension of the disease to the lateral sinus by way of its bony boundaries; (b) the middle fossa is attacked through the tegmen tympani, or (c) the posterior cerebral fossa may be invaded through a fistulous tract.

J. M. McCallum, Toronto, (56, Apr.) finds *two varieties of mastoid inflammation*. In one there is erosions of the bone, causing an abscess; in the other there is sclerosis of the bone in the mastoid. Because of the hardened bone in the latter class the danger of brain complications is greater.

W. E. Shackleton, Cleveland, (134, Sept.) reports two acute cases of mastoid abscess in which bulging of the deeper portions of the posterior wall of the auditory canal was a prominent symptom.

In one of the cases there was no swelling over the mastoid,

and in the other post-auricular swelling did not occur until after perforation into the cranial cavity had taken place.

Langfried (49, Oct.) reports a case of suppurative mastoiditis following middle-ear suppuration, in which there had been no acute symptoms. When acute mastoid symptoms occur after a long-continued middle-ear suppuration he considers delay inexcusable. The simple opening of the sinus is not sufficient in most cases, but the entire mastoid should be cleaned out.

Weismann (81, June) reports three cases of acute mastoiditis opening through the posterior wall of the canal.

Mastoid Operations and Report of Cases.—In acute cases of mastoid disease, C. A. Ballance (2, Apr) believes that only the antrum, or the antrum and any cells which may be suppurating, should be opened, but that the tympanum and meatus should be left undisturbed; while in operations for the cure of chronic otorrhoea the simple opening of the antrum can be of little value. The communication between the antrum and tympanic cavity is small and in chronic suppuration is apt to be still further narrowed by granulations, and swollen mucous membrane. The bridge which overhangs the communication between the antrum and attico-tympanic cavities should always be thoroughly removed. At the same time the outer wall of the attic should be removed. The test of the completeness of the procedure is made by causing a bent probe to touch the tegmen tympani and on withdrawing outward it should meet with no resistance.

Successful results in the operative treatment of chronic otorrhoea require the fulfillment of two conditions: (1) The complete removal of all diseased tissues; (2) the healing of the large bone wound from the bottom.

In order to obviate the painful, prolonged and unsatisfactory after-treatment of the operation and to insure thorough epidermization of the bone wound and tympanum, Ballance makes use of two operations for the cure of chronic otorrhoea. In the first operation all diseased tissue is thoroughly removed, together with the posterior superior wall of the external auditory canal, care being taken to see that the entire outer wall of the attic is removed.

The result of this procedure is that the meatus, tympanum, attic, antrum, and as much of the mastoid as is necessary, are made into one large bone cavity. Any granulations which may be found in the antrum, attic, or tympanum are curetted away and the walls of these cavities are left bright and hard. The greatest danger is encountered when curetting the posterior part of the inner wall of the tympanum, which is overhung by the Fallopian aqueduct. The fossa of the aqueduct is frequently found to contain granulations and may be carious. An incision is made in the lower wall of the cartilaginous canal throughout its whole length and the incision carried well out into the concha; then upward and backward as far as the level of the anterior commencement of the helix. The thick layer of tissue behind the meatus is removed and the meatal flap is turned backward and upward and is attached by silkworm gut stitches to the mastoid flap. The bone cavity is cleansed and packed with a narrow strip of gauze and the end brought out through the meatus. The mastoid incision is closed completely with fine silkworm-gut or horsehair. The packing in the bone cavity may have to be changed after a few days, but if the cavity has been thoroughly cleansed it can usually remain until time for the second operation—a week or ten days.

The second operation is one of skin-grafting in the bone cavity. When this cavity becomes lined with delicate pink granulations, usually in a week or ten days, the patient is anesthetized, the mastoid wound is opened with the handle of the knife, the pinna is turned forward and the wound thoroughly dried. Large epithelial grafts are taken from the thigh or arm and carefully made to cover and lie flat against—

1. The anterior wall of the cavity formed internally by the anterior boundary of the tympanum and attic, and externally by the anterior wall of the large osseous meatus.
2. The anterior part of the cavity formed by the tegmen tympani and the superior wall of the enlarged osseous meatus.
3. The inner wall of the attic and tympanum.
4. The tegmen antri.

5. The ridge formed by the Fallopian aqueduct.
6. The inner wall of the antrum.

If more than one graft is employed, care must be taken to avoid overlapping on the one hand, and the leaving of uncovered granulations on the other. Drops of blood and bubbles of air, caught between the graft and the wall, give rise to much trouble. This is best overcome by inveigling the graft edge-wise over the depth of the cavity, instead of pushing the center of it into the tympanum. Tiny, moist pledgets of gauze and steel probes with pear-shaped heads (six millimetres and four millimetres in diameter) will be found most useful in applying the graft accurately to the raw bone surface. When the grafting is complete, eminences and depressions should be as clear to the eye of the operator as before the operation.

The best protection for the grafts is pure gold leaf about one or two thousandths of an inch in thickness. The gold leaf is carefully pushed into position, and again all eminences and depressions in the bone must be clearly defined. A narrow strip of dry iodoform gauze is now packed into the attic, tympanum, and antrum, and the end brought out through the meatus. The mastoid flap is now completely closed, and the outside dressing applied. A week later the packing is removed. This causes no pain, and leaves the gold leaf lining attic, tympanum, and attic. The gold leaf may be left undisturbed for three or four days more. It can then be removed with forceps after gentle irrigation, when the irregular cavity comes in view, white in color. A little dry gauze is packed in against the grafts, and should be changed every two or three days till the healing process is complete. The secondary skin-grafting operation as proposed by Ballance is approved by Dalby, Dundas Grant, Lucas, Milligan, Barker and Walker.

Kuster, Marburg, (193, Oct. 28, '99) describes his method of opening the mastoid. The ear is drawn sharply forward and an incision is made close along the margin of its attachment. The incision begins above the level of the auditory meatus and extends downward around the tip of the mastoid, and is then car-

ried upward again to the level of its beginning. The flap thus made is left attached to the bone. With a broad chisel, a thin layer of bone the shape of the flap is separated from the mastoid. This plate of bone with its skin covering is turned upward out of the way until the operation is completed. In closing the wound the flap is brought into its original position. A small piece of the bone flap should be cut away to allow for drainage.

Little deformity, rapid healing, and a good opportunity for the use of a tampon in case of injury to the sinus or dura mater, are the advantages claimed for this method.

C. R. Holmes (7, July 28) says: "The osteoplastic opening of the mastoid after Kuster is still a very recent operation. That it will receive much encouragement at the hands of other operators I believe is doubtful; if used at all, it will largely be limited to acute cases, requiring only the classical operation. His claim that the flap offers a good opportunity for the tampon in case the sinus or dura mater is injured during the operation is not worthy of serious consideration. Many of our German confreres still practice the leaving of a large post-auricular opening after radical mastoid operations. Some are in favor of leaving the opening permanently, while others close it by a plastic operation after one or two years, provided there has been no return of the disease. This opening is very unsightly, especially in men, who can not cover these parts after the manner of women, and excepting in rare cases I fail to see the need of it. In 115 radical operations, including the usual variety of cases, I have not found it necessary to leave a single one permanently open, and all have recovered with a canal larger than before the operation, permitting free inspection of every portion of the cavity. The transplantation of skin grafts into the cavity after the radical operation, either by Thiersch's method or pedicled flaps, shortens the process of epidermization very materially; but it still remains to be proven whether or not the hearing power of the ear is less than it would be by the old method; because a thicker epidermis may form over the stirrup and round window. Also whether, in certain cases, the leaving of the hammer and anvil in the radical operation will

give better results, remains to be seen by practical demonstration upon a larger number of cases."

J. K. Love (9, Nov. 17) compares the *Schwartz* operation with what he calls the *single-channel operation*. The disadvantages of the former are:

1. The patient must wear an external dressing for a long time—generally some months—to cover the mastoid wound.
2. When it is determined to close the wound there is great doubt as to the conduct of the inner end of the mastoid. Will it become an undrained sinus or pocket in which pus will collect and give trouble in the future? It is quite certain that chronic suppurative discharge continues in many cases after the most careful treatment.
3. Even if healing eventually occurs, there is apt to be an unsightly pit left behind the auricle.
4. The surest result is to keep the mastoid wound perfectly open till all discharge of the middle ear has ceased, and then to close it by plastic operation. But it will take many months or years before this can safely be done.

The advantages of the single-channel operation are:

1. All dressings are removed from the side of the head within a fortnight, and the patient may resume work at that date.
2. All treatment is carried on via the widened canal, which is so capacious that every part of the healing surface can be easily seen through the speculum and every nook of it cleaned and packed with absorbent gauze.
3. Complete healing takes place in three months, and, as a rule, two dressings per week are sufficient.

H. Knapp, New York, (1, July) reports a case of *extensive caries of the mastoid and petrous portions of the temporal bone*. A successful operation was performed and perfect hearing restored. The integrity of the tympanic cavity and external auditory canal were preserved.

The noteworthy features of the case are summed up by the author as follows:

1. In an acute tympano-mastoid suppuration in a healthy man, of 30 years of age, who never had had ear trouble before, the tympanum, drumhead and hearing power were restored, while the destruction went on in the mastoid and the adjacent third of a petrous portion of the temporal bone, under formation of an outer fistula of the mastoid.

2. Headache and the continuance of the mastoid disease determined the patient to give his consent to an operation which he had formerly refused.

3. The operation, consisting in a total resection of the mastoid, exposing the dura in the posterior cranial fossa, scooping away all carious bone in the basal portion of the petrous, and carving out with a sharp spoon the bony wall of the facial canal in its whole length through the mastoid, also the entire horizontal semicircular canal, forming a platform from the latter to the frontal semicircular canal, where the caries stopped.

4. The complete and unusually rapid recovery, with integrity of the sound-conducting apparatus, and restoration of perfect hearing.

Percy Jakins (8, Feb. 10) makes a *tabulated report of eighty consecutive cases* of radical mastoid operation for chronic suppuration. In each of the cases there was, in addition to the purulent discharge, one or more of the following symptoms: Pain in the affected ear or corresponding side of the head, vertigo, nausea, vomiting and general malaise. In most of the cases the following conditions were present: Polypi or granulations in the tympanum, tenderness over the mastoid process, swelling of the meatus, bulging downward of the posterior wall of the meatus and the adjacent part of Shrapnell's membrane, facial paralysis, caries of the ossicles or dead bone felt by the probe in the walls of the cavum tympani. The symptoms and physical conditions mentioned were rarely found singly, but were mostly grouped in varying proportions. In every case the necessity for the operation was fully proved by the discovery of granulations,

cholesteatoma or necrosed bone in the antrum or surrounding parts. In several of the cases it was necessary in the course of the operation to lay bare the dura mater in the middle fossa of the skull to a greater or less extent by the removal of the lamina of necrosed bone in the roof of the antrum. For the same reason the groove of the lateral sinus also was sometimes exposed in taking away a small piece of its bony wall. The hearing power was considered of secondary consideration. It was noted, however, that audition was seldom rendered worse by the operation, while in some cases it was materially improved, probably owing to the removal of the accumulations of pus, granulations and cholesteatomatous material which had filled the tympanum so as to prevent sound waves from reaching the labyrinth.

Forty-five of the eighty cases were females and in forty-nine cases the left ear was affected.

Only three deaths occurred and in each case the patient, when brought to the hospital, was in a very advanced stage of pyemic poisoning. In the successful cases the threatening symptoms soon disappeared and the change from sullen stupidity to lively intelligence was very noteworthy. It is Jakins' opinion that it is safer to operate at an early period of suppurative disease, should there exist any of the enumerated indications for it, than to wait until there are signs of a more threatening character or until the intra-cranial contents have become infected.

In reporting an operation for *acute mastoid abscess of ten days' duration*, McCallum (56, Apr.) says: "The mastoid was completely riddled, and the entire cortex and tip of the mastoid had to be removed. An opening was found in the inner surface of the tip of the mastoid, through which pus had found its way down among the deep muscles of the neck. To the posterior side of the mastoid, granulation tissue had reached the sigmoid sinus, but its walls were not involved. The antrum was opened and scraped free from granulations. The abscess cavity in the bone and in the deep tissues of the neck were dressed in the usual way, and went on to an uneventful recovery.

"How quickly and how completely scarlet fever may destroy

the mastoid is shown by this case, in which practically the whole process was ablated. The pus had found its way out through the mastoid in two places—on the external cortex, and on the inner side of the tip; but the spontaneous openings in the bone were so situated that pus still accumulated in the tip of the mastoid. Nor had these spontaneous openings in the bone in any way tended to safeguard the sinus, for it was found covered with granulation tissue, and, at any moment, this patient might have developed sinus thrombosis with all its septic possibilities, meningitis or abscess of the brain.

“One should never be satisfied with a mere exit for the pus. Too many vital structures are too close to the abscess cavity to permit one to think of anything but the most radical surgical procedure, with the condition of things exposed plainly to view.

“This case shows also how the sole manifestation of a mastoid abscess may be pus low down in the neck.”

T. H. Harris, New York, (1, Apr.) reports a case of very *severe frontal pain* following an operation for mastoid abscess. The patient was a boy of 17 years. The ordinary anodynes were given, but apparently without effect. There was slight elevation of temperature after the pain had continued several days. The patient had noisy delirium most of the time. Nothing in the condition of the mastoid or adjacent parts could be found to account for the pain. The frontal sinus was opened, and the other accessory nasal cavities were explored with negative results. Forty days after the mastoid operation iodide of potassium was commenced. Five days later the pain began to gradually subside, and twenty days afterward the patient left the hospital.

Neither Harris nor those who saw the case with him were able to satisfactorily account for the unusual symptoms. Several theories are suggested, among which are syphilis, pachymeningitis, and hysteria.

Molinié, Marseilles, (1, Oct.) reports seventy-three *cases of acute mastoiditis in which no operation was done*. Of that number, fourteen recovered spontaneously or with medical treatment. Four recovered after spontaneous external opening and

discharge of pus. Seven terminated in death. Five resulted in cholesteatoma. Eleven resulted in fistulous openings. Of the remaining thirty-two cases, part passed into a chronic condition of simple fungus entritis, while in a few patients an almost absolute calm exists, disturbed in an intermittent manner by sensations of weight and even pain awakened by cold, overwork and intercurrent diseases.

Stanculeanu and Baup (155, Mar. 10) report a fatal case of mastoiditis in which the *bacillus coli* was associated with the *bacillus perfringens*.

Death from septicemia was preceded by profound stupor, diarrhea and sudden drop in temperature. Inoculation of animals with the *bacillus coli* and the *bacillus perfringens*, separately, produced slight lesion, but when the two bacilli were combined they invariably induced rapid, fatal septicemia.

S. M. Burnett, Washington, D. C., (128, Feb.) reports ten cases of mastoid abscess with operation. In two of the cases there was extensive necrosis of the temporal bone with sequestra.

One case was a child six months old, another a woman of 72 years.

J. M. McCallum (56, Apr.) reports a case of *bilateral mastoiditis* with left facial paralysis previous to the operation. The patient was a child of two years. In operating, the wall of the aqueductus Fallopii was found eroded just where it passed around the floor of the aditus, which accounted for the facial paralysis.

J. Dunn, Richmond, (128, Apr.-June) reports a case of *extensive destruction of the mastoid process* following facial erysipelas. Twenty-four hours after operation erysipelas began again, but promptly subsided under local treatment with pure carbolic acid, followed by alcohol.

J. Hollinger (7, Feb. 17) reports a *radical mastoid operation* done four years ago for *persistent otorrhea*. Granulations were found in the attic and antrum, but the mastoid cells were entirely obliterated by bone proliferation. The malleus and incus were removed. Three weeks after the first operation the entire granulating surface in the attic, antrum, and mastoid was lined with

epidermis. This was accomplished by scraping the epidermis from the leg and smearing the mass over the entire cavity. A skin flap was turned into the wound, causing a permanent post-auricular opening. Since the healing process was complete the cavity had remained dry, except for a discharge which came from the Eustachian tube when the patient caught cold.

E. P. Friedrich, Kiel, (128, Apr.-June) reports three cases of *mastoiditis occurring in diabetic patients*.

All were operated and two recovered. In the general consideration of this subject Friedrich says: The serious aspect of aural disease in diabetics is the rapid extension of osseous caries, which should be early and extensively removed. During the operation it is found, as a rule, that the subjective and objective symptoms of the patient are out of proportion to the extreme extent of the disease. Early operations are often followed by difficulties based upon the nature of diabetes mellitus.

The danger from operating on diabetics consists in the subsequent appearance of sepsis and coma. Both complications depend upon the amount of sugar and the acidity of the urine, which, when found together in a high degree, form a contra-indication of the operation.

The danger from sepsis is greater in aural operations which present septic wounds and often give rise to mixed infections, owing to the communication of the pus from the diseased osseous parts with the external meatus through the middle ear.

The appearance of diabetic coma is not due to the operation or to shock, but to the narcosis. The kind of narcotic used is not of so much importance as the metabolic change thereby produced through the increased acidity.

In all cases in which the aural disease requires an early operation, the general health of the patient and the condition of his circulatory apparatus, lungs and kidneys should be considered.

A case of *skin grafting in the mastoid*, by Charles Ballance, is reported by U. Pritchard (2, Sept.) as follows:

A woman, aged 54, admitted to St. Thomas' Hospital, Feb. 5, 1900.

History—Left otorrhea since childhood. Previously admitted to St. Thomas' Hospital, May 7, 1898, with large masto-squamous abscess, foul otorrhea, and inability to walk without assistance in consequence of vertigo. An operation was performed, but the bridge and outer wall of the attic were not removed. Since this operation the vertigo has continued.

Present Condition—Scar over the mastoid from other operation; foul left otorrhea; vertigo so bad that she cannot walk at all without assistance; loud and distressing tinnitus; left side quite deaf, and tuning fork not heard.

Feb. 6, 1900: Complete Mastoid Operation—Behind the tuberosity a sinus was found leading into the petrous for one-half inch, and from it pus was oozing. The petrous was removed until no further signs of pus were discoverable. In doing this the semicircular canals were, in part, destroyed, and the back of the vestibule opened. Clear fluid escaped. The cavity in the petrous at the conclusion of the operation was about five-eighths of an inch in depth and in size would have taken half of a Barcelona nut. It was repeatedly swabbed out with absolute phenol. For several days the patient was very sick and giddy.

Feb. 17: Epithelial Grafting Operation—On throwing the flap forward clear fluid was seen flowing from the cavity in the petrous. The granulating surface of the wound was covered by a skin graft after the method described by the operator. Feb. 19: No sickness and no vertigo since grafting operation. Feb. 22: Plug removed. Patient at once said that she could hear well. Mar. 20: Healing has been complete for some days, and patient can run down the ward. There is no vertigo and the tinnitus has ceased. The hearing has returned in a marvelous way. Three weeks after the operation the watch could be heard at six feet, and a whisper at at least twenty-three feet distance.

Maxwell (9, May 19) reports a case of left mastoiditis with well-defined left *optic neuritis*. The neuritis disappeared a few days after the operation.

W. F. Cole, Waco, Texas, (91, Jan.) believes that *free irrigation* both of the external auditory canal and the mastoid wound is of great value after operations. At least two quarts of sterilized water at a temperature of 100 degrees should be used at the time of each dressing.

E. Waggett (2, Oct.) reports a case of *Bezold's complication of purulent mastoiditis*. The abscess formed in the infra-auricular space.

While watching the perforation in the membrane firm and continuous pressure was made upon the tumor. Presently a jet of pus was seen to come from the perforation, proving conclusively the connection between the infra-auricular swelling and the middle ear.

During the operation the course of the pyemic extension was traced from the middle ear through the mastoid cells to a fistulous opening into the digastric groove.

In this particular case Waggett believes the mastoiditis was caused by repeated Politzerization during a muco-purulent otitis media with a small perforation in the membrane.

M. Lermoyez (2, Feb.) reports a case of *Bezold's mastoiditis in an infant* two and a half months old. The abscess formed beneath the sterno-mastoid muscle and pressure upon it caused pus to flow from the meatus. In operating the suppurating antrum was found to communicate freely with the mastoid cells. The opening from the mastoid was in the digastric fossa on the inner side of the apophysis.

Sixteen cases of Bezold's mastoiditis are reported by E. J. Moure (1, Oct.). In most cases he finds bone lesions other than in the digastric groove.

H. Wilson, Detroit, (3, May) reports the removal of almost the *entire petrous portion of the temporal bone*. The patient gave a history of long-continued chronic suppuration, with facial paralysis of three years' standing. A large abscess of the neck had been opened previously.

After cleansing and shaving the mastoid and peri-mastoid area, an incision was made about three-eighths of an inch pos-

terior to the line of the base of the auricle and parallel with it, from a point somewhat above the auricle, to the mastoid tip. Pushing back the periosteum, the posterior wall of the bony canal and the mastoid cortex lying over the antrum were removed by means of chisel and gouge, the bone being very dense and difficult to chip away. After the antrum had been reached, a considerable portion of the entire mastoid cortex was removed, forming a large conical opening in the bone. The antrum was small and rather obscure, and no accumulation of pus was found elsewhere in the mastoid. Upon examining the site of the middle ear, it was found to be filled with a large, firm, movable body, the surface of which was covered with granulations and bathed in pus. All attempts to remove this body with forceps or curette, using as much force as was deemed safe, failed, apparently because it was too large to be withdrawn through the bony wound. It was then grasped with strong forceps having long, slender jaws, and after several efforts crushed into several fragments. These were removed with comparative ease, and after being cleansed were found to make up practically the entire labyrinthine portion of the temporal bone. The cavity left after the removal of the sequestrum was very large, measuring one and five-eighths inches from the posterior border of the bony wound inward and forward, and about one-half to five-eighths of an inch in height and depth medialward. It could not be determined with certainty whether the inner wall of the cavity were bony or membranous, since they were covered with granulations which it seemed unwise to disturb with a probe or curette. It was therefore gently irrigated with 1-5000 sublimate solution, dusted with iodoform-boracic acid powder and packed lightly with gauze. The external wound was then dressed in the same fashion. The cartilaginous portion of the external auditory canal was not split nor stitched, ample drainage and access to the wound cavity being afforded without this procedure. Following the operation, the patient entered upon a normal and uninterrupted recovery.

That *facial paralysis following mastoid operation* is not always due to injury of the nerve is proven by a case reported

by M. Mahu (2, May). The paralysis occurred a few hours after the operation. Subsequently the patient was killed by a fall, and a post-mortem examination revealed a nerve which presented neither solution of continuity nor apparent wound. The paralysis was evidently due to neuritis.

J. H. Woodard, New York, (3, May) says that *the dangers of mastoid operation* have been grossly exaggerated. Irregularities in the anatomy of that region have been supposed to be common enough to endanger the patient's life during the operation, or the integrity of the important closely adjacent parts. That supposition is a purely fanciful one. It is true that the operator may wander from the course he should follow, but it is futile to ascribe the error to an alleged anatomic peculiarity of the patient. Moreover, throughout the entire management of the case, until healing is absolutely complete, the most rigid antiseptic precautions are essential. It is very difficult to establish an antiseptic state in the invaded region in pyogenic disease of the middle ear. And for that reason Woodard thinks one ought to be even absurdly particular in attempting to disinfect every part to which the infective germs may have penetrated. Such efforts should not be relaxed until the wound has healed perfectly, and there is no discharge from the ear.

S. H. McGavren, Sacramento, Cal., (1, Nov.) reports having seen a case of *spontaneous cure of a severe mastoiditis* in a girl of ten years. Two years before the case came under his observation the child had had a severe ear trouble, lasting for several weeks. The mother said that a piece of bone as large as her thumb nail had come away from behind the ear. The healing was complete, leaving a deep, cup-shaped depression. Hearing was good. No physician had been called.

W. A. Martin, San Francisco, (1, Feb.) reports a case of *spontaneous exfoliation* of the upper and posterior wall of the external auditory canal, leaving the middle ear, attic and mastoid antrum merged into one large cavity—a Stacke operation performed by nature. The patient was twenty-two years old and the trouble had begun in early childhood. When first seen, a year

previous to the report, the upper portion of the cavity was filled with detritus analogous to cholesteatoma, which was easily removed by the use of the syringe. The patient appeared to be absolutely deaf.

OTOGENIC BRAIN DISEASES.

Leptomeningitis.—F. M. Wilson (128, Feb.) reports a case of *leptomeningitis of otitic origin*. The patient was a man forty-two years old, alcoholic and giving a specific history. For six months he had had a discharge from the right ear.

At the time of operation the patient was semi-comatose, having tremulous movements, temperature 103 degrees, and stiffness of the neck, but no external symptoms of mastoiditis. After penetrating 7-16 of an inch in solid bone came upon a large, deep-seated antrum containing pus but no granulations or softened bone, and apparently having no communication with the tympanic cavity. The antrum was thoroughly curetted. The next day the temperature was down and the pain permanently disappeared; the other symptoms grew worse and the patient died comatose.

Autopsy: There was a large area of leptomeningitis over the base of the brain, also over the whole right lobe of the cerebellum, in which there was a small abscess as well. There was a clot in the right lateral sinus. The dura over the upper surface of the temporal bone was healthy except at the junction of the petrous ridge and the squamous portion, where there was a foramen leading through the ridge from the posterior fossa to the middle fossa, and being filled with pus. The perforation of the tympanic membrane had healed. Leading back from the tympanic attic into the petrous portion was a pneumatic space, $\frac{1}{4}$ by $\frac{1}{8}$ by $\frac{1}{8}$ -inch in diameter, and from it two pin-hole openings, one leading to the antrum and one leading into the usual foramen at the point of junction of the petrous ridge and the squamous portion. The sigmoid groove formed the roof of the antrum. The posterior end of the foramen through the ridge opened into the sigmoid groove.

Gradenigo (203, Vol. XLVI., p. 155) reports four cases of otogenic leptomeningitis with three recoveries. In two of the cases lumbar puncture showed cloudy cerebrospinal fluid containing leucocytes and virulent staphylococci. Gradenigo believes that lumbar puncture has a curative effect in these cases.

Scheib (246, No. 15) reports the case of an infant eight days old, who died with obscure symptoms of general weakness. The autopsy showed bilateral suppurative otitis media, suppurative meningitis, and partial pulmonary atelectasis. In the pus from the middle ears and from the inflamed meninges were found numerous bacilli morphologically identical with the bacillus lactis aerogens of Eserich.

Dundas Grant (2, Aug.) has abstracted the cases of *meningitis of otitic origin* occurring in Schwartze's clinic (203, June 28) as follows:

1. *Purulent meningitis* in a girl aged eighteen, who had had chronic suppuration of the middle ear since childhood. There supervened headache and vertigo for four weeks, after which the complete mastoid operation was performed on the right side. Four days later the headache returned with severity, the right pupil was wider than the left, there was facial paresis, and the tuning fork was heard better on the affected side; lumbar puncture evacuated fluid under moderate pressure containing numerous leucocytes and a few cocci. Ultimately death took place from purulent meningitis, and there was found to be a carious spot on the posterior surface of the petrous bone, corresponding to the situation of the aqueductus vestibuli; there was erosion of the bony semicircular canal.

2. *Purulent meningitis following acute suppuration of the middle ear.* A man aged forty-seven had suffered for fourteen days from symptoms of influenza, during the last eight of which he had had discharge from the ear preceded by earache, and for five days headache and vomiting, with temperature 100.2 degrees. Paracentesis was followed by evacuation of pus, but two days later there supervened a rigor, with rise of temperature up to 102.2 degrees, pain in the sacrum and groin, followed by coma

and death. There was found diffuse purulent lepto-meningitis; the antrum and cells were filled with pus, and there was a congenital dehiscence in the roof of the middle ear, from which apparently the infection had extended to the meninges.

The authors are in doubt as to the involvement of the mastoid cells, because the tenderness on pressure was confined to the tip of the process, and there was no stenosis of the meatus or external edema; further, there were doubts as to whether the almost apoplectic rapidity of the onset might not indicate a cerebral hemorrhage, more especially as the patient was a corpulent and full-blooded man.

3. *Tuberculous meningitis.* An infant aged one year, with suppuration of the middle ear almost from its earliest days, became comatose. Lumbar puncture revealed an invasion of leucocytes, but no bacteria; the mastoid cells were opened, but found to be normal. Death took place and the cause was found to be tuberculous meningitis. In this case the slow course of the disease excluded purulent meningitis, so that it could only be serous or tuberculous; as lumbar puncture gave no evidence of the latter it was therefore considered justifiable to open the mastoid cavities on the chance of the condition arising from otitis.

4. *Tubercular meningitis.* A boy aged sixteen, the subject of chronic suppuration of the left middle ear, was brought in a state of unconsciousness of one day's duration. The bowels had been constipated for eight days; he was emaciated, his cheeks presented a hectic flush, and there were crepitations generally disseminated over the lungs; the temperature varied from 97 to 100.8 degrees. A diagnosis of tubercular meningitis was formed post-mortem. Microscopical examination showed that the disease of the ear was not tuberculous in nature.

5. *Purulent meningitis.* A boy aged eight had suffered from chronic suppuration of the middle ear. When he presented himself he had had a rash and fever for three days. A radical operation was performed, revealing the presence of a cholesteatoma. On the following day, on cleaning the wound, there was a sensation of vertigo when the head was moved. Two days

later the temperature rose to 103 degrees and a wound, which was present on the left foot, looked unhealthy; the headache continued and the temperature kept up when the wound in the foot grew better; the patient was restless and wandering. The temperature kept high. Six days later it underwent extensive oscillations and the sinus was therefore submitted to operation: it was incised after ligature of the jugular vein; there was free bleeding, no thrombus, and a tampon was inserted. Four days later the pulse became weak, the breathing irregular, with long pauses, and death took place in coma. There was found purulent meningitis at the base of the brain and the ventricles; the microscopical examination of the temporal bone showed the scala tympani almost completely filled with round cells, and the membrane of the round window had on each side a deposit of such cells. The extension was probably through the aqueductus cochleae.

6. *Labyrinthitis; purulent meningitis.* A woman aged twenty-two, who had suffered from chronic suppuration of the middle ear since childhood, was seen on Jan. 15, 1900, on account of the continuous discharge. A polypus was removed and for three weeks there was no fever, but occasional vomiting and a tendency to sleep. On Feb. 7 the radical operation was performed: a carious recess lined with granulations was found opening out of the posterior part of the antrum. Death ensued in a few days, and the purulent meningitis was then found, with purulent fluid in the cochlea, and softening of the nerves in the internal auditory meatus. The authors consider that the labyrinth was infected through the fenestra ovalis.

Cerebral Abscess.—Dieulafoy (82, June 27) reports a fatal case of *cerebral abscess* and submits the following *general conclusions*:

1. With few exceptions cerebellar abscess is always consequent to otitis.
2. Intra-cranial lesions, due to otitis, are multiple: cerebral meningitis, cerebro-spinal meningitis, pachy-meningitis, phlebitis

and thrombosis of the sinuses, abscess of cerebrum and cerebellum.

3. Abscess of the cerebellum generally produces the cerebellar "syndrome": headache (chiefly occipital), vertigo, *ictus*, loss of equilibrium, staggering, drunken gait, vomiting, nystagmus, cervical contracture, optic neuritis, muscular asthenia, somnolence, sopor, coma. These may all be produced by a lesion in any part of the cerebellum, right or left lobe of vermix. Facial paresis and paresis of the external oculo-motor nerve are the only localizing symptoms.

4. Cerebellar symptoms must be distinguished from Meniere's symptoms. In the latter the headache is not so violent, nor so persistent, nor has it the same localization as cerebellar headache; somnolence and torpor increase from day to day in cerebellar cases, but not in Meniere's disease.

5. Abscess of the cerebellum is to be distinguished from abscess of the brain (temporo-sphenoidal and occipital lobes). In cerebral abscess the motor affections, pareses, contractures, spasms, affect the side opposite to the brain lesion and otitis; word blindness and hemianopsia are important signs.

6. Tumors of the cerebellum: glioma, gliosarcoma, tubercle, parasitic tumors, produce the cerebellar "syndrome," but usually mixed with other symptoms, due to pressure on neighboring parts.

7. Syphilis of the cerebellum deserves separate consideration as regards both diagnosis and treatment.

8. The only treatment for abscess of the cerebellum is surgical.

W. H. Dudley (1, Oct.) reports a case of *cerebral abscess* located two inches diagonally backward from a point three-fourths of an inch above the bony meatus. The abscess was aspirated and about half an ounce of pus removed. No drainage was left in the cavity. During the next four weeks the temperature and pulse were little above normal. Urine and feces were discharged involuntarily or intentionally in the bed. The patient seemed possessed of the spirit of evil. He would pull the band-

ages whenever his hands were left free; would attempt to bite the nurse, and in other ways showed an evil disposition. His physical condition continued to improve until the twenty-eighth day, when he was allowed to sit up for the first time. The day following his temperature rose to 104.4 degrees F. The next day his temperature dropped to 101 degrees, and for the next few days gradually subsided until it became normal.

With the subsidence of the temperature after its abrupt rise on the twenty-ninth day the mental condition rapidly improved.

Dudley thus states the points in the case which he considers worthy of special notice:

1. The nature and extent of the involvement of the mental faculties. To all intents and purposes his mind was a complete blank. He did not realize his most urgent wants, nor was he able to put forth the least effort to relieve them; and after his recovery there remained a vacancy of five or six weeks, of which he had not the slightest recollection.

2. Although there was no paralysis or paresis that could be made out, there was a semi-rigidity of all the voluntary muscles, which persisted several weeks after the brain had been relieved of the pressure of the abscess, which latter also points to cerebral irritation.

3. The vice of manner which he exhibited in attempting to injure his attendants during the first few weeks after the operation finds no place in his natural disposition, for after recovering sufficiently to be about the wards a more kind or docile patient is seldom seen.

4. The location of the abscess, as will be seen by the direction of the aspirating needle when evacuating the abscess, was in the temporo-sphenoidal lobe, and from an actual experiment on a cadaver, a needle introduced as above, the point was found opposite to and quite near the posterior horn of the right ventricle.

5. That there was destruction of brain tissue is evident from the positive presence of broken-down brain cells, as found by a competent pathologist; hence an abscess must have existed,

either at the time of operating, or a short time previously, and had been evacuated into the lateral ventricle.

The condition of the patient's mind for some weeks after the operation is not common in those suffering from cerebral abscess; and yet in this case there is nothing in the history pointing to any other cause, while from what history is available an abscess of the brain is exactly what one would expect to find.

H. Knapp (128, Feb.) reports a case of fatal *brain abscess* presenting, previous to operation, *pronounced optical amnesic aphasia*. When shown an article and asked to name it she would say, "I know what it is but cannot name it." When told the name she would correctly repeat it. A post-mortem examination of the brain showed an abscess occupying the middle of the temporo-sphenoidal lobe surrounded by a dense white capsule varying from 0.5 mm. to 5.5 mm. in thickness.

As to the precise location of the optical memory center the case furnishes no addition to the stock of knowledge already acquired; for it is well understood that this center is in the temporo-sphenoidal lobe. To verify this broad statement the case offers another example, but does not show the precise place, for the softened area was too large.

E. Waggett (2, Mar.) reported a case of mastoid abscess, *cerebellar abscess and sequestrum of the cochlea*. The patient made a good recovery from the operation, but the sequestrum came away nine months later.

Muck (128, Aug.) reports six cases of extradural abscess with operation and recovery, and two deaths and one recovery from sinus thrombosis.

J. Horne, London, (2, June) reports two cases of chronic otorrhea in which the *suppurative process extended to the internal ear, thence to the cranial cavity*, with fatal termination. Both patients had been in good health up to the time the internal ear became involved, which was marked by dizziness. In one case death occurred thirteen and in the other twenty-four days afterward. In each case post-mortem examination showed that infection had reached the cranial cavity through the aqueductus ves-

tibuli, and that an abscess had formed between the folds of the dura mater in the immediate neighborhood of the saccus endolymphaticus.

[When dizziness and deafness occur suddenly in the course of chronic otorrhoea careful examination should be made for evidence of pus in the vestibule. If found the vestibule should be drained either through one of the fenestra or by an opening through the prominence.—Ed.]

Hessler (203, Vol. 48, No. 1 & 2) reports nineteen cases of brain tumor associated with suppurative otitis media.

George Lehr (128, Apr. & June) reports six cases of cranial complications of otitis media. He believes that until we are able to arrive at a correct diagnosis in intracranial disease of otitic origin all such cases should be reported in detail.

H. Blake (8, Mar. 31) reports a case of *brain abscess* following otitis media and mastoid disease.

While operating the abscess was found in the temporo-sphenoidal lobe. About an ounce of pus was evacuated and a drainage tube inserted. The patient died next day. At the autopsy it was found that the abscess cavity was about one and three-fourths inches in diameter, lined by a pyogenic membrane and communicated with the descending horn of the left lateral ventricle.

Cases of brain abscess with operation and recovery are reported by E. Gruening (128, Feb.) and W. H. Dudley (3, Aug.)

Fatal cases of brain abscess following otitic suppuration have been reported by R. A. Wilson (8, May 13), W. C. Phillips (70, Apr. 21), Bonain (11, Apr. 21), C. H. May (128, Feb.), G. L. Richards (3, Aug.), Milligan (2, Mar.) and R. Payne (23, Sept.).

Dundas Grant (2, Aug.) has abstracted the cases of *cerebral abscess of otitic origin* occurring in Schwartze's clinic (203, June 28) as follows:

1. *Cerebral abscess and purulent meningitis* in a youth aged seventeen who had suffered from chronic suppuration of the left middle ear since childhood. He complained of pain in the

left ear, swelling of the left eye and behind the left ear. The complete radical operation was performed. Ultimately death took place, and there was found, post-mortem, an abscess in the left temporo-sphenoidal lobe, with purulent meningitis, which had probably been originally serous. There had been considerable fluctuations of temperature; it never reached 101 degrees until the night he died, when it reached 104 degrees.

2. *Cerebellar abscess* in a man aged thirty-eight with old-standing suppuration of the left ear. He complained for three months of increasing headache and vertigo; this had become more severe within the last eight days, and there was superadded vomiting with nausea; his appetite was good, but his bowels were obstinately constipated; he was pale and emaciated; the tuning fork on the vertex was heard better on the opposite side, and Galton's whistle was only heard at the mark 5.5; the temperature was normal. The radical operation for cholesteatoma was performed and there was found a fistula of the horizontal canal. Ten days later the left pupil was observed to be larger than the right, but reacted well to light; the dynamometer in the right hand rose to 40 and in the left only to 20, although the patient was left-handed. The cerebellum was then trephined; no pus was evacuated, but some relief was obtained. Death took place a week later, and an abscess was found in the cerebellar hemisphere which would have been reached at the operation if the operator had gone a little deeper. The difficulty in the diagnosis in this case depended on the probability of the symptoms being due to diseases of the labyrinth.

3. *Temporo-sphenoidal abscess and sinus phlebitis.* A woman aged thirty-eight, suffering from chronic suppuration of the left middle ear, complained of pain in the left ear of four days' duration, followed by violent headache and vertigo. Temperature 101 degrees; pulse 80 to 90; respiration 20. The fundus oculi was normal; there was tenderness on the mastoid. Next day she had difficulty in finding her words; the right hand was weaker than the left; there was no jugular tenderness, but at mid-day she had a rigor, the temperature went up to 104 degrees, and

she became delirious. Lumbar puncture was negative, but the fluid escaped with greater force than normal. The complete mastoid operation was performed for cholesteatoma; the dura mater was exposed, and found to be covered with granulations, but the sinus appeared normal. The left temporo-sphenoidal lobe was then exposed; the skull was trephined over the left temporo-sphenoidal lobe; there was no pulsation, and the pia seemed unchanged. On puncture there was no pus until the cannula was pointed backwards over the antrum, when pus escaped and a large drainage tube was introduced. Four days later death took place and the abscess was found to have perforated into the descending cornu of the lateral ventricle; there was a broken-down thrombus in the neighboring sinus. The sudden rise of temperature with a rigor suggested commencing meningitis, but it might have been pyemic; there must have been a combination of cerebral abscess and sinus thrombosis, though the only pathological conditions found in the lungs were edema and bronchitis.

4. *Cerebellar abscess.* A woman aged twenty, the subject of bilateral chronic suppuration of the middle ears since measles at the age of ten, complained, on Nov. 13, '99, that for one week she had had pain in the right ear with headache, vertigo, rigors and diarrhea; the optic discs were ill defined; there was a bulging in the attic of the right ear, and the tuning fork on the vertex was heard better in the opposite ear; temperature was 99 degrees, pulse 50 to 60, respiration 20. The following day the temperature was 98 degrees, the pulse 48, and the dynamometer registered 7 with the right hand and 15 with the left. The radical operation was performed and there was found a fistula on the wall leading into the cholesteatomatous cavity; there was a fistula also on the outer wall of the labyrinth above the fenestra ovalis; there was no evidence of any passage in the bone leading into the cranial cavity; lumbar puncture was normal. The cerebellum was then trephined and a quantity of foetid pus evacuated; tracheotomy had to be performed on account of respiratory difficulty. Later there occurred a hernia of the cerebellum, of which a portion sloughed, and later still the dressing was found soaked with a colorless fluid.

Death occurred. On post-mortem examination it was found that the abscess had burst into the fourth ventricle. Among the difficulties in connection with this case was the fact that both ears were affected, and in the history the rigors were very prominent. Among other conditions revealed post-mortem were multiple abscesses in the kidneys and suppurative inflammation in the bronchioles.

5. *Temporo-sphenoidal abscess; purulent meningitis.* A boy aged fifteen had had chronic suppuration of the left middle ear since childhood. He was seen on January 25, 1900, on account of increased discharge of four weeks' duration, with occasional pain in and behind the ear, also vertigo during the previous week; he tended to fall to the left side when the eyes were closed. Granulations were found in the left attic, and the tuning fork on the vertex was heard best on the affected side. His tonsils and adenoids were removed, and a week later he complained of vomiting, headache, and tenderness over the upper cervical vertebra; temperature 103 degrees, pulse 86. Frequent vomiting ensued, and lumbar puncture revealed fluid under pressure containing some leucocytes, but no bacteria, until it was centrifugalized, when a few cocci were found. The radical mastoid operation was performed, opening into a large cholesteatomatous cavity. A large extradural abscess was opened and the dura was exposed; it was of greenish tint, and when slit up there escaped a quantity of green foetid pus from a cerebral abscess which had opened spontaneously. The pain and headache continued, and then for fourteen days there was an absence of all meningitic symptoms; the appetite was good and the temperature normal; then there supervened vomiting, stupor, partial anesthesia of the right leg, blood on the dressing, prolapse of the brain. Lumbar puncture revealed streptococci. The temperature rose and death took place, the post-mortem revealing purulent meningitis and abscess in the left temporo-sphenoidal lobe, which had ruptured into the anterior cornu of the lateral ventricle. The absence of meningitic symptoms for fourteen days was remarkable, and the authors are inclined to think that the emotional state of the patient, resulting in

forcible crying, led to the rupture of the abscess into the lateral ventricle, apart from which the patient might possibly have recovered.

6. *Temporo-sphenoidal abscess discharging through the ear in a case of chronic suppuration of the middle ear* in a boy aged seven. On account of persistent otorrhea and headache the mastoid operation was performed, but the flow of pus from the tympanum was so great that it could not have come from the middle ear alone; a bent probe was passed through a fistula and was found to lead through a hole in the dura mater into the temporo-sphenoidal lobe. This was trephined further back, and a drain was passed through, and the patient rapidly recovered. There was commencing optic neuritis, and this, along with the profuseness of the flow of pus, indicated intracranial suppuration either cerebral or extra-dural, and it was found to be the former. It was remarkable to what a perfect degree the mental faculties were preserved; the absence of pressure symptoms was explained by the escape of pus through the middle ear.

Cerebral and Cerebellar Abscess.—A case of chronic purulent otitis media, followed by an *abscess in the temporo-sphenoidal lobe, and also an abscess in the cerebellum*, with fatal termination is reported by G. Bacon, New York, (1, July). During the first operation pus, granulations and necrotic bone were removed from the right mastoid, but no communication with the cranial cavity could be discovered. Later cranial symptoms developed. She had paralysis of the left abducens; paralysis of the left side of the face; slight left hemiparesis; moderate left hemianesthesia; left hemianopsia and choked discs.

In the second operation the original wound was reopened and the incision carried upwards so that the bone could be thoroughly cut away for a considerable area above the external meatus. The dura was found thickened but not adherent to the tympanic roof. A small sinus was found in the dura and a large abscess located in the right temporo-sphenoidal lobe. About two or three ounces of foul-smelling pus was evacuated.

For several days after the operation the patient seemed to

improve, but later the paralysis became more marked. The choked discs became also more apparent. The patient was very restless and continually cried out, and a diagnosis was made of probable lepto-meningitis. Death occurred thirteen days after the operation.

Autopsy.—The temporo-sphenoidal lobe presented a large abscess cavity passing well back. It had been well drained. The base of the brain showed nothing of especial interest. An abscess was found in the right lobe of the cerebellum. The pus was foul-smelling and very thick. It appeared to have begun in the dentate body, which it had destroyed. It then passed across to the opposite lobe, which it invaded to the extent of half an inch. The ventricles were found normal. No communication could be demonstrated between these two abscess cavities.

Cerebral Tuberculosis.—B. C. Collins (1, Jan.) reports a case of *cerebral tuberculosis* following a mastoid abscess in a child fourteen months old. Death occurred eight weeks after the mastoid operation. Autopsy showed the brain substance everywhere softened, large increase in the cerebral fluid, and tubercle involving the brain substance in the temporo-sphenoidal lobe. Meshes of the pia-mater were everywhere studded with tubercle, and there were tubercle in the lungs, liver and spleen. The mesenteric glands were enlarged. The sinuses of the meninges were normal, but possibly a beginning meningitis at the base.

SINUS THROMBOSIS.

Symptoms.—The following is an outline of the symptoms of sinus thrombosis as given by J. F. McKernon (1, June), seven of whose cases are reported later.

Temperature.—This depends upon the amount of septic material entering the general circulation. If the amount is large the fluctuation will be great and the changes sudden. If the amount of septic material entering the system be small the fluctuation will be less marked and the changes will be gradual. Other compli-

cations may materially influence the temperature. An accumulation of pus in the brain has a tendency to keep both the temperature and the pulse down.

[When meningitis is present fluctuations of temperature are less marked and the tendency is to run higher.—Ed.]

Pulse.—This is apt to bear the usual relation to the temperature.

Chills.—They are usually present and are a valuable aid in diagnosis. The severity of the chill with the accompanying temperature changes seem to bear some relation to the amount of systemic infection. Chilliness occurring in the course of suppuration of the middle ear should put us on our guard.

Pain.—In most cases it is greater than in ordinary mastoiditis. It is usually referred to the side and back of the head. When the internal jugular becomes involved pain is referred to the side of the neck, though it is probably due to the infected lymphatic glands more than to the diseased vein.

Nausea and Vomiting.—These symptoms in greater or less degree are usually present. They occurred in all the seven cases reported.

Respiration.—During the early stages the rate is little affected, though later it becomes rapid. In two of the cases reported it was above 60 per minute.

Vertigo.—Usually absent unless meninges are involved.

Consciousness.—Cerebration is usually below normal. Questions are answered with hesitation. Meningeal involvement greatly increases the prominence of this symptom.

Intra Ocular.—A neuro-retinitis is present in a certain number of cases. Of the seven cases reported six were examined and fundus changes found in only two.

Constipation.—In all cases coming under McKernon's observation this symptom was present, and is one which he believes co-exists with the earlier stages of the disease. In the later stages of the disease of the abdominal type, or when there is an advanced general sepsis, then diarrhea is present. Septic enteritis, with a metastatic deposit of the intestines, was present in the fourth

case, and for several days prior to the evacuation of the deposit presented very much the clinical picture of typhoid fever.

Local Symptoms.—The so-called Greisinger's symptom (edema over and around the mastoid and occipital veins) was present in five of the seven cases. Stiffness of the muscles of the neck on the affected side is a more or less constant symptom.

In two of the jugular cases the lymphatic glandular involvement, both superficial and deep, was very marked and a valuable aid in diagnosis, though their involvement does not always indicate phlebitis of the veins, as in a Bezold perforation the lymphatic infection in this region may be a prominent feature, so their presence in this situation is by no means always secondary to jugular involvement.

Among some of the general symptoms at the outset of the disease may be mentioned malaise, loss of appetite, a heavily furred tongue and a foul breath. The face wears an anxious and pallid look, the skin is dry and later presents a yellowish tinge, indicative of sepsis. Nearly all of these symptoms enumerated were present in the cases reported in this paper.

Treatment.—No uniform plan or procedure can be adopted in these cases but each individual case should be treated as seems best at the time.

A complete and thorough exposure of the sinus before opening it is desirable in all cases. The field of operation should then be flushed with peroxide of hydrogen. This should be followed by a second flushing with absolute alcohol. A freshly sterilized aspirating needle (recently tested) should then be thrust through the dura, covering the sinus. The part usually explored first is that lying above the bend or knee, and the other portions of the sinus can be explored in like manner. The needle should be introduced, not directly downward, but for some distance one or two inches, along the lumen of the vessel. If a negative result be obtained, and one is still in doubt on account of the physical appearance of the sinus, it is better to make a small opening in the dura, covering the sinus with a scalpel, than to limit the procedure to simply an unsatisfactory aspiration.

If a clot be found, then the dura covering the sinus should be opened freely and the clot removed with a curette, together with any disintegrated material that may be present. When the clot is removed and the blood flow established from the proximal end, it should be allowed to flow for a few seconds, so as to remove any further clot or septic material that may be present in the vessel further back. The flow of blood is then easily controlled by packing a small piece of folded gauze directly against the lumen of the vessel. The lower portion of the sinus can then be proceeded with in the same manner, and after the removal of the clot an attempt made to restore the circulation at the bulb. In a fair number of uncomplicated cases this can be done quite easily, but in others it becomes impossible without dangerous manipulation, and in these cases where the sinus has been free from a septic clot, or the presence of pus, and the region of the neck shows no jugular involvement, it is better to cleanse the operative field and pack the sinus firmly to the bulb with gauze, rather than to proceed any further.

If, on the other hand, upon opening the sinus we find a disintegrated clot or pus, or both present, then, without further manipulation above, we should, as rapidly as is consistent with carefulness, expose, ligate at the clavicle, and resect and remove the internal jugular vein of that side to its commencement at the bulb.

If the facial, maxillary, thyroids, or other veins be involved, they should be ligated beyond the point of involvement and resected also. All enlarged glands, during the course of dissection, should be also removed, so as not to leave any possible field for infection subsequently. Care should be taken to completely separate the pneumogastric nerve from the vein at the lower point of ligation, before cutting the vein, as here the vein and nerve lie very close to each other. The soft tissues of the neck should then be flushed with a hot saline solution and closed by sutures to within an inch of the bulb. After this it becomes an easy matter to remove the pus and disintegrated matter left in the sinus. If any sloughing edges of the dura over the sinus be present they should be removed, as otherwise they retard the

healing process. In a septic case, after operation, when the case does not progress favorably as we think it should, it is best to wait for a time before any other procedure is instituted; for we must remember the fact that here is a septic case, developing for several days, with a gradual absorption into the system of a poisonous element, and it would be strange indeed did the recovery not show some evidence of a past and present sepsis, while the septic material is being eliminated from the system.

The time to operate on a case of sinus thrombosis is as soon as the diagnosis is made, and if in doubt it is better to make an exploratory operation early rather than to wait for an array of symptoms that no one familiar with the disease can fail to recognize.

During a prolonged operation for this disease there is no method of stimulation that will compare in its beneficial effect with a hot saline enema, provided the patient becomes weak. This can be repeated if necessary. If the patient does not respond quickly, after being put to bed, and it becomes necessary to stimulate by other means, then a direct transfusion of a normal salt solution can be done.

One of the most valuable aids to immediate recovery after operation is the administration of oxygen while the patient is coming out from under the anesthetic. Its further administration at intervals for a period of three or four days is of great advantage.

Viereck (128, Oct.) states that *ligation of the internal jugular vein* in operating for thrombosis of the sinus is not yet generally adapted on account of some slight danger connected with it and impeding the outflow of the facial and cranial veins. Therefore its beneficial effect ought to be set forth by large statistics, from which, however, must be excluded: death from other causes, from meningitis and cerebral abscess, delayed operation, previous metastases, and ligating the thrombosed vein.

After reporting a number of cases from the clinic at Leipzig and carefully criticising various considerations with regard to ligation, Viereck concludes that ligation prevents pyemic infection

with greater safety than simple opening of the sinus. Therefore it ought always to precede the latter. Thus breaking of thrombi and aspiration of air are not to be feared.

B. A. Randall (159, Oct.) believes that there is much yet to learn about the diagnosis of lateral sinus thrombosis. In some cases the symptoms point almost conclusively to this condition, while in other cases the symptoms are obscure.

In operating rapidity is of great importance. Ligation of the jugular is not always necessary. Shock should be avoided by preventing loss of blood, and by the injection of hot saline solutions to maintain the temperature.

The use of the mallet should be avoided as much as possible. When metastatic abscesses occur they usually do not show the same virulency as the original infection.

Report of Cases and General Considerations.—O. J. Stein, Chicago, (145, Sept.) reports a case of *fatal sinus thrombosis*, in which the clot was believed to have extended to the opposite sinus by way of the transverse and circular sinuses, though no post-mortem examination was made.

During the course of a well-defined sinus thrombosis the soft tissues of the eye, side of the face and neck of the opposite side became greatly swollen showing interference with the return of blood from those parts.

In order to understand the relationship existing between thrombosis of the cavernous sinus and certain symptoms, Stein says it is necessary to consider a few anatomical facts.

The vessels tributary to the sinus are the (1) superior and inferior ophthalmic veins; (2) spheno-parietal sinus, arising from a meningeal vein; (3) central retinal vein; (4) inferior anterior cerebral vein.

In the case of the superior and inferior ophthalmic veins these two vessels do not empty their main flow of blood into the cavernous sinus, but into the facial veins; therefore, thrombosis of the cavernous sinus does not necessarily very materially affect the orbital veins.

The central retinal vein communicates with the superior

ophthalmic vein ; but, according to Henle, it often empties directly into the cavernous sinus. This is of importance and explains the Grafe theory of "congestive papilla." But this theory is not always tenable, for in cases of obstruction in the cavernous sinus where the retinal vein empties into the superior ophthalmic vein the blood may find an outlet through the facial vein, with which it communicates and hence, in such cases, no marked congestion of the papilla would exist.

The cavernous sinus empties into the lateral sinus by way of the superior petrosal sinus, and into the jugular vein by way of the inferior petrosal, and into the anterior vertebral plexus by way of the basilar plexus.

Aside from these main routes it has other outlets in the form of minute veins communicating with the outside of the skull.

Lying within and passing through the cavernous sinus we have the following structures: The internal carotid artery with its sympathetic plexus, the third, fourth, sixth and ophthalmic nerves. Pressure on the third nerve would cause a paralysis of the upper eyelid and a divergent squint ; also rotation on its vertical axis would be prevented. In the very beginning the pressure symptom would cause a contracted pupil from irritation of the papillary fibres of the oculo-motor nerves. Later dilatation of the pupil would result, due to the paralysis from continual pressure. Irritation of the sixth nerve, which supplies the external rectus muscle of the eyeball, would cause the eye to rotate outward, while a paresis of the same nerve would cause the eye to rotate inward. This nerve, as a rule, is affected earlier than the third nerve.

Irritation of the ophthalmic nerve gives rise to a supra-orbital and frontal neuralgia. Where the pain is local and confined to the course of the supraorbital and frontal nerves the source of irritation is, in all likelihood, located in the cavernous sinus. But in case the pain is diffused over the entire half of the head, the pressure most likely comes from a meningitis, which involves the second as well as the third branch of the trigeminal nerve. The pain is accompanied by a hyperaesthesia of the skin

of the same region which, at the same time, is warmer and redder. There are present other symptoms of irritation, like lachrymation and photophobia. Later on, when the pressure causes paresis of this nerve, we have a condition of anaesthesia of the skin, of the forehead, eyelids, ocular conjunctiva, and anterior portion of the nose. The skin at the same time becomes pale in color and cool to the touch.

As a result of interference with circulation from the clot formation in the cavernous sinus we have a damming back of the blood in the veins tributary to the sinus, causing an edema of the eyelids, conjunctiva, forehead and nasal mucous membrane. This condition exists first only on one side, but soon spreads to the opposite, owing to extension of the clot to its neighboring sinus by way of the transverse and circular sinuses.

M. G. Laurens (82, May 16) describes two forms of *septicopyemia due to suppurative otitis*: 1. A thrombo-phlebitis with involvement of the lateral sinus. 2. A thrombo-phlebitis of the jugular vein and intracranial branches with involvement of the lateral sinus. The sinus may become involved by contiguity of tissues or by continuity through the veins.

When death occurs it may be due :

1. To an extension of the phlebitis, progressive cerebral edema, and arrest of the intracranial circulation.
2. To cerebral or cerebellar abscess, or meningitis.
3. To pyaemic metastases.
4. To general septic intoxication.
5. To pneumogastric paralysis, hemorrhage from the sinus, or to phlebitis of the legs.

E. Friedenbergl, New York, (3, Aug.) reports a case of mastoid abscess with extension to the cranial cavity in which, in operating, he found the sinus covered with a pseudo-membrane composed entirely of pneumococci. The patient was a girl of four years, with history of good health. Three days after the pain began in the ear the membrane was incised, and five days later the operation was done.

The periosteum was found slightly thickened, the bone somewhat soft and markedly hyperemic. When about 2 mm. of the cortex had been removed a small amount of pus appeared. The probe entered a very large cavity toward the tip, meeting a soft and elastic resistance. The bone was quickly removed from the outer surface of this cavity principally with bone forceps, downward and forward as far as the bulb of the jugular, and posteriorly about one-third the distance to the torcular. The sinus thus laid bare pulsed. It was completely covered with a peculiar grayish-yellow pseudo-membrane which had to be removed piecemeal from its walls with forceps. The wall of the sinus, after the removal of this pseudo-membrane, was healthy except a spot about the size of a coffee bean, which was granulating. Palpitation showed the sinus contents to be fluid. Recovery from the operation was rapid and uneventful.

On bacteriologic examination of this pseudo-membrane it was found to consist of an absolutely pure culture of the pneumococcus (Fraenkel) without any tendency to the formation of chains such as has been frequently described by Bordon, Uffraduzzi, Gradenigo and others.

Friedenberg notes the following points of interest in the case:

1. The excessive rapidity and extent of the process leading to perisinusitis on or before the eighth day after aural symptoms had been noted.

Formerly it was believed that aural disease of pneumococcic origin was somewhat more rapid than that due to streptococci or staphylococci, but that it had little tendency to spread and to lead to serious mastoid or intracranial complications. Now it is supposed to be more virulent or as virulent as any form of aural micro-organism. (Leutert, Scheibe, Koerner.)

2. The nearly complete disappearance of pus from the mastoid with its replacement by a pure pneumococcus culture.

Recovery of a case of sinus thrombosis after removal of the clot and re-establishment of the flow from both directions is reported by S. Lodge (2, Sept.).

The same writer reports a case in which, twenty days after a right Stacke operation, symptoms of cranial extension suddenly occurred. A second operation was performed, but no pus found. In searching for pus in the temporo-sphenoidal lobe, the lateral ventricle was tapped. Clear fluid came away. The patient's condition grew steadily worse and death occurred the following day.

Autopsy eighteen hours after death. Trephine opening and mastoid region aseptic in appearance; superior longitudinal sinus healthy. On opening the dura mater much fluid escaped, not unlike very thin custard in consistence and color. Veins of pia mater greatly engorged; arachnoid and pia felt water-logged. The brain was removed dripping with above fluid. The brain's sulci were full of this yellowish-green lympho-pus. A section of the brain showed lateral ventricles full of similar fluid; no sign of abscess; tracks of Macewen's pus-searcher aseptic-looking. The brain felt, on its removal, like a mass of putty ready for use. On examining the remaining sinuses, the right lateral sinus could be traced with difficulty, as its walls were adherent and the bony groove for the sinus was almost obliterated. This condition extended from the torcular to the bulb. From the bulb to its junction with the subclavian the internal jugular was an imperious fibrous cord. The left lateral sinus was of normal size, and the groove in the bone was very well marked, but the sinus was occluded almost to the commencement of the sigmoid portion by ante-mortem thrombus. The thrombus was sent to the Clinical Research Association for a report. The report stated that "the white clot from the lateral sinus consists of partly decolorized fibrin, mingled with recent blood-clot. The fibrin was contracted into layers, and is undoubtedly ante-mortem in formation."

The cause of death in this case was presumably due to an extension thrombus forming in the left lateral sinus, thus throwing a greater strain on the collateral intracranial venous circulation than it could bear on account of the right jugular and lateral sinus being already occluded.

After the patient's death his wife gave the following information: About fifteen years ago he had suffered from a severe neuralgia for three weeks on the right side of his neck, which "shot from his neck to the top of his head." He was kept in bed by his medical attendant for perhaps three days, and detained from his work for about a week. Neither he nor his wife was able to account for it. His ear was not affected at that time. It is Lodge's impression that the process of venous obliteration commenced in the neck at that time, and gradually extended without symptoms until the left lateral sinus became involved.

A. Young (92, Oct. '99) reports a successful operation upon a case of mastoid abscess, with *thrombosis of the lateral sinus*. The patient, two and one-half years old, had had otorrhoea for six months following measles. Three weeks before the beginning of the acute symptoms the discharge had ceased. Following the cessation of the discharge there developed drowsiness, failure in appetite, starting and crying at night. When admitted to the hospital, examination showed temperature 100.2 degrees F.; pulse, 140 to 150 per minute; respiration, 40 to 50 per minute; there was intense drowsiness, a persistent and spasmodic half sigh, half yawn; pupils equally dilated; no paralysis of face or limbs; pale earthy complexion; dry, coated tongue; a persistent, troublesome cough; a large swelling behind the ear; the left meatus and middle ear contained very foul, dry pus; there was some swelling in the upper part of both cervical triangles, but no tenderness over the left internal jugular vein; after evacuating the subperiosteal abscess, two erosions were found, one anteriorly leading into the antrum, the other posteriorly passing into the sigmoid groove. The antrum and tympanum were cleared out, the posterior meatal wall removed, and the sigmoid sinus exposed for fully half an inch; the posterior wall of the antrum was eroded into the sigmoid groove. The sinus was covered with granulations and pus, and looked black and unhealthy. Some of the bone behind the sinus was removed and the cerebellar dura exposed; the tegmen tympani and tegmen antri were also removed, there being erosions in that situation; though the sinus

felt somewhat hard to the finger, it was not opened. Distinct improvement followed the operation, but on the second day a rise of temperature and the very doubtful appearance of the sinus led to the opening of the latter. A fetid, dark gray, disintegrating clot was evacuated. The temperature, which at first fluctuated, finally became normal, and complete recovery ensued.

E. B. Dench (128, Dec.) reports three cases of recovery after ligation of the internal jugular for septic thrombosis, following purulent otitis media.

Dundas Grant (2, Aug.) has abstracted and commented upon the following cases of *sinus thrombosis* occurring in Schwartz's clinic (203, June 28):

1. *Metastatic pyemia from sinus-phlebitis simulating rheumatism* in a male patient aged 34, in whom the radical operation was performed on account of cholesteatoma, the sigmoid sinus being exposed to a very small extent. Convalescence was well established, when in a fortnight the temperature rose in association with purulent pharyngitis; the pains came on in various joints, simulating acute rheumatism; within a few days jaundice appeared, which was soon followed by death. There was found to be a thrombus in the right sigmoid sinus.

The authors find it difficult to account for the sixteen days' latency, if the thrombus was present before the operation. They are not aware of data which would enable them to identify the moment at which thrombosis takes place, and it seems possible that the period stated might elapse between the formation of the thrombus and invasion of the circulation by pathogenic organisms, the characteristic febrile disturbance only taking place when purulent disintegration has advanced to such an extent as to liberate the pathogenic organisms and allow of their invading the blood-stream.

2. *Thrombo-phlebitis of several sinuses* in a boy aged 14, with chronic suppuration of the right middle ear since the age of six. He complained on July 3 of pain behind the right ear, and a foetid, watery discharge from the meatus; there was tenderness over the mastoid and jugular regions; the tuning fork on

the vertex was heard loudest in the good ear. On the 5th and 6th the temperature oscillated between 98.8 and 106 degrees; lumbar puncture was normal. The radical operation was performed, followed by the sinus operation and ligature of the jugular. The next day there was edema of the eyelid, on the following day a rigor, with elevation of temperature to 106 degrees. Ultimately death took place, and there was found thrombophlebitis of the right transverse sigmoid and inferior petrosal sinuses, also involvement of the straight sinus and the jugular vein, and metastases in both lungs. The physical signs in the chest at the time of the sinus operation were negative, and it was only two days after the operation that any evidences were present.

3. *Thrombo-phlebitis of sigmoid and cavernous sinus* in a girl of 14, with chronic suppuration of the right ear since childhood, who complained for fourteen days of pain, headache, and vomiting. Eight days before being seen she had had a rigor, and the ophthalmoscope revealed congestion of the nasal half of the right optic disc. Next day there was a rigor, and the temperature went up to 102.2 degrees. The mastoid operation was performed; the sigmoid groove was opened, and there was found extensive disease of the sinus and perforation. Pressure on the jugular forced up pus; therefore ligature was performed. Death took place eventually from pulmonary pyemia, and both cavernous sinuses were found to be affected. The sinus operation was too late to prevent general infection; however, had it been performed earlier, there was a probability that the existing thrombus of the cavernous sinus would have led to the patient's death. There was found an involvement of the atlanto-occipital joint.

4. *Thrombo-phlebitis of the sigmoid sinus and jugular vein following scarlatinal otitis.* A boy aged three and a half years had acute suppuration of both middle ears, following scarlet fever, which had passed off five weeks before. There were diarrhoea, shivering, occasional twitchings of the extremities, but no vomiting. The left mastoid was then opened and the cells were found infiltrated; eight days later edema appeared behind the right ear; this was opened, and the sinus was found bare to

some extent, but it seemed normal. The temperature rose eight days later to 104 degrees, and underwent extensive oscillations; later there occurred tonsillitis, diarrhoea, pneumonia, metastatic suppuration in the shoulder-joint and death. Post-mortem revealed pleurisy, embolic infarcts into the lungs, thrombosis of the sigmoid sinus, and jugular vein partly broken down. The case was rendered difficult by the comparatively long periods of normal temperature. The extent of bone diseased struck the authors as being remarkable in an acute scarlatinal otitis.

5. *Septico-pyemia from sinus infection, following fracture of base of skull.* A man aged 58 had had a fracture of his skull, with bleeding from the nose and right ear, as the result of an attack by an ox. There was mental dullness; his bowels were obstinately confined; temperature 105 degrees, pulse 136; the tuning fork on the vertex was heard best in the affected ear. Death took place from septico-pyemia, and on post-mortem examination the sinuses and jugular vein appeared normal, but on microscopical examination streptococci and staphylococci were found in the minute clots adherent to the intima; this had seemed to indicate that thrombosis had taken place, but that the thrombi had either escaped or been absorbed.

6. *Thrombo-phlebitis of the sigmoid sinus.* A girl aged 17 had had suppuration of the middle ear for six months. For three days she had had an increase of discharge, preceded by pain; she suffered from vertigo, rigors and vomiting. The temperature fluctuated, and reached 105 degrees in the night, and went down in the morning to 100.6 degrees. The radical operation was performed, and there was found a passage leading to the sinus; this, when exposed, presented a gangrenous appearance. After ligation of the jugular vein, the sinus was slit up, cleared and plugged; there developed a converging strabismus and twitchings of the facial nerve on the opposite side; the optic discs were dull, and respiration became difficult. Death took place, and there was found purulent thrombosis of the sinus and vein, purulent bronchitis, metastatic infarct in the lungs, swelling of the mesenteric glands and of the spleen. The complete removal of

the thrombi at the operation was impossible. The mental disturbance, restlessness, headache, high fever, strabismus, and diplopia suggested meningitis, and the slowing of the pulse abscess of the brain. Death was probably due to the general septic infection.

7. *Thrombo-phlebitis of sigmoid sinus and jugular vein.* A man aged 39 had three years previously suffered from acute suppuration of the middle ear. Three weeks before presenting himself he had had a return of the discharge, preceded by pain of three days' duration; rigors came on, and were followed by a swelling of the left ankle and forearm; the temperature reached 104.6 degrees. Two days later the mastoid operation was performed; pus was found in the cortex; the sigmoid sinus was exposed; its lower part was normal, but in its upper part it appeared infiltrated with pus; the jugular vein was ligatured, and the sinus was split up, but no thrombus was found; icterus ensued, with a temperature varying from 103.6 to 107.4 degrees, when deep coma set in and death ensued. There was found a thrombus of the right sigmoid sinus and the bulb of the jugular vein; the cerebral symptoms were, therefore, due to sepsis, which the authors attribute to osteomyelitis of the petrous bone rather than to lateral sinus phlebitis.

8. *Thrombo-phlebitis of the lateral sinus following acute suppuration of the middle ear.* The sinus was exposed, and further operation postponed; the fever continued, and four days later the jugular vein was ligatured; there were various metastases, but recovery ultimately took place. In this case a transitory rise of temperature followed the attempt to syringe from the sinus through to the bulb and jugular vein. Such syringing should be practiced with the utmost discretion, for fear of driving infective material into the smaller tributaries of the jugular vein.

9. *Pyemia following rupture of the sinus.* During the performance of the mastoid operation in a case of acute suppuration of the middle ear, following scarlet fever, spontaneous rupture of the exposed sinus took place, and plugging was required; oscillations of temperature followed, and ten days later ligature

of the jugular vein with further opening of the sinus was practiced.

10. *Thrombo-phlebitis of the sigmoid sinus following chronic caries of the temporal bone* in a girl aged 14. During the radical operation there was found to be extensive caries on the posterior wall; for seven months the scar of operation remained very tender, and distinct edema extended from the site of operation back to the occiput; the sinus was, therefore, exposed; it did not pulsate or bulge when the jugular vein was pressed, and there was a distinct firm clot at the region of this vessel; the jugular was ligatured and the sinus was slit backwards and upwards until blood flowed freely. Ultimate recovery took place.

11. *Pyemia following rupture and plugging of the sinus during mastoidotomy in a case of otitis following a blow* in a boy aged nine. The mastoid became involved, and an operation on it was performed outside the clinic, a wound of the sinus taking place which called for plugging. After a few days pyrexia and fever supervened, and it was deemed necessary to expose the sinus and ligature the jugular vein. After three days the temperature rose, the upper plug was removed, and some bleeding took place. A tampon was replaced and removed next day.

This, among others of the narrated cases, shows that an injury of the sinus is not a matter of such indifference as is often supposed.

12. *Extra-dural abscess and sinus-thrombosis following chronic suppuration of the middle ear with cholesteatoma* in a man aged 33. The suppuration had lasted for two years, but for eight days before admission there was fever with repeated rigors, pains, giddiness, nausea and vomiting; the temperature oscillated, reaching at times 103 degrees; the ordinary operation was performed for the removal of the cholesteatoma, the cavity for which extended far back. During the operation the sigmoid sinus gave way, but so little blood escaped that it was obviously to a great extent thrombosed; the jugular vein was ligatured, the sinus slit up and cleared; the temperature was high for five days,

at the end of which the dressing was changed, and then it became normal. The pulse was good throughout, and the authors consider this a most favorable diagnostic sign. Another point of interest was the junction of the facial with the thyroid vein, resulting in a considerable reduction in the size of the internal jugular. This condition might add very much to the difficulty in applying a ligature.

13. *Sinus-thrombosis with pyemia in a case of chronic suppuration with an obstructing polypus* in a youth aged 17. Sinus thrombosis with pyemia supervened with rise of temperature and frequent rigors. The mastoid operation was performed, and a fistula found in the posterior wall of the osseous meatus, from which foetid, cheesy pus escaped; the sinus was exposed, covered with discolored granulations; the internal jugular vein was ligatured, and then the sinus was slit up, very little blood escaping; a black thrombus was easily removed, and then free bleeding came from the central end of the sinus. The patient rapidly recovered.

H. Woods, Jr., Baltimore, (1, July) reports a *fatal case of sinus thrombosis*, in which, at the time of operation, the circulation was re-established from both directions. Metastatic abscesses occurred in different parts of the body. General streptococcus infection was found on autopsy. The clavicular end of the jugular was closed with a septic thrombus.

Edgar Meier (13, Oct. 24, '99) believes *in all cases of otitic pyemia there is thrombosis in the lateral sinus*. It may be located far down, even in the jugular bulb, while the sinus is open above. In such cases exploratory puncture of the sinus could be of no diagnostic value. Even when the hemorrhage has been so profuse as to require control by packing he has found a thrombus, though it may not have been exactly at the point of incision. Meier expresses the opinion that life might often be saved by a more thorough investigation of the condition of the sinus.

Dundas Grant (2, Mar.) reports a case of *thrombosis of the lateral sinus*, in which the sinus was opened and cleared of a broken-down clot in the horizontal portion of the sinus. On

scraping away the broken-down portion a perfectly normal-looking clot was reached, which was let alone with the thought that the original cause of the infection having been removed, no further infection would take place, and that the clot which had formed would act in the same way as a ligature. The debris was carefully removed, the field irrigated with perchloride solution, dusted with iodoform and lightly packed with iodoform gauze. Recovery was uneventful. Grant was prepared to ligate the jugular and clean out the sinus and bulb, had further symptoms of infection occurred.

James F. McKernon, New York, (1, May-June) reports seven cases of *sinus thrombosis dependent upon purulent otitis media*. Each case was operated. There were six recoveries and one death.

In three cases there were epidural abscesses, and in two cerebral abscesses. In one, a double Bezold's perforation had occurred. In two, there was double ligation and resection of the jugular.

In the first case the sinus was filled with a firm clot extending from the torcular above to the beginning of the jugular below. The clot was cleared out with a curette until there was free hemorrhage from both directions. The hemorrhage was controlled by a firm packing of iodoform gauze. Recovery was uneventful.

In the fourth case the normal sinus was accidentally opened. The hemorrhage was controlled by iodoform gauze packing. A week later a second operation became necessary because of pyemic symptoms and tenderness along the course of the internal jugular.

The bone over the sinus was removed for two inches extending from the jugular bulb outward toward the torcular. A linear incision was now made throughout the whole length of the exposed sinus wall from the point uncovered above, to the bulb, and at once pus oozed from the lower half of the lumen of the blood channel. The upper part was occupied by a partially disintegrated clot, together with granulations and some pus. This space from end to end was cleansed of its contents, and hemor-

rhage, which was let flow for a few seconds, established from the proximal end, so that in case any septic material was present it would be carried out and away by the flow. A piece of iodoform gauze was placed against the opening to control the hemorrhage. The part below was again cleansed, and the posterior sinus wall examined in the region of the cerebellum, but, save for a slight amount of discoloration, it appeared normal.

An attempt was made to establish the current below at the bulb. This was found to be more difficult than from above, but by using a very small curette the flow was here also established, and gauze packed into the bulb to control the return flow.

Following the operation the pulse became very weak and rapid, but was improved by the rectal injection of normal salt solution. McKernon believes that the sinus complication was caused by the accidental injury during the first operation.

In the fifth and sixth cases the jugular could not be cleared of septic material, so it was ligated below at the clavicle and above at the bulb. The intervening portion of the vein was resected. Following the operation in each of these cases normal salt solution injections and oxygen were frequently administered.

The seventh and only fatal case of the series was one of purulent mastoiditis, pyemic sinus thrombosis and cerebellar abscess. The sinus was opened and a free flow of blood established, as in the former cases. An abscess in the cerebellum, containing about an ounce of pus, was evacuated, and the cavity irrigated, first with sterilized water, then with absolute alcohol. By the seventh day following the operation the patient's condition showed septic absorption, and a second operation was undertaken. A small amount of pus was found in the jugular bulb. A considerable quantity of clotted, granular material, together with fibrin and pus, were removed with the curette, after which there was free bleeding. The hemorrhage was controlled by gauze packing, the wound cleansed with alcohol, and a dressing applied. Two days later, the pyemic symptoms continuing, a third operation became necessary. A large quantity of pus was found in the neighborhood of the cerebellar abscess cavity. On examining

the bulb end of the sinus, a few drops of pus were found, and for this reason and for the purpose of preventing any further septic absorption, it was decided to ligate and resect the internal jugular vein. This was done, ligating it just above the clavicle, and resecting to the bulb, and it was found to contain a clot for a little over two inches below the point of ligation above.

The patient continued to improve until the evening of the second day, when she suddenly stopped breathing, and all efforts to re-establish respiration were unsuccessful. The pulse continued growing gradually weaker for fifteen minutes after respiration ceased.

No autopsy was permitted, but McKernon believes death to have been due to an embolus in the respiratory center. Temperature at time of death was 107 degrees F.

O. Joachim, New Orleans, (7, Feb. 24) reports two cases of mastoid disease complicated with *phlebitis of the lateral sinus*. In both cases the infected tissue in the mastoid was removed, the sinus opened and thoroughly irrigated. Then the jugular was ligated low in the neck and vein incised above and irrigated. One patient recovered. The other died of pyemia, the autopsy showing multiple metastatic abscesses in both lungs.

A. H. Cheatle (8, Jan. 13) reports a case of *sinus thrombosis with recovery, in which the jugular was not ligated*. The sinus was exposed for an inch, and found filled with a firm clot. The sinus was opened throughout its entire exposed length and the clot removed. The circulation was re-established in the direction of the torcular, but in the direction of the bulb the entire clot was not removed. Hemorrhage was controlled by a gauze packing and the wound filled with an iodoformed cyanide gauze. A chill occurred an hour after the operation and the temperature reached 102.4 degrees. Recovery was slow, but uneventful.

Of sinus thrombosis in general, Cheatle says: "That ligation of the jugular is not always necessary in thrombosis of the lateral sinus is well recognized, but no guiding rule has been laid down. It seems that if a healthy-looking clot can be seen well below the breaking-down area, ligation of the vein is not neces-

sary; but in order that such a condition may be found it must be recognized that one rigor demands immediate operation. A rigor does not necessarily mean that there is a septic thrombosis, but it cannot be too strongly insisted upon that there should be no waiting after a rigor has occurred during the course of an acute or chronic middle-ear suppuration."

W. C. Phillips (70, Apr. 21) reports a case of sinus thrombosis from ear suppuration. The sinus was opened and the clot cleared out, but the vein was not ligated. Recovery was uneventful.

T. Barr and J. H. Nicoll (194, 1900) report two cases of sinus thrombosis following purulent otitis media.

In both cases the internal jugular was ligated. Both recovered, though one, a man of 30, had gangrene of the right lung.

M. Toeplitz, New York, (128, Feb.) reports a case of general pyemia following acute suppurative otitis media. Abscesses were opened in various parts of the body. The lateral sinus was cleared of septic material. The jugular was ligated. Recovery followed.

In intracranial diseases of otitic origin, J. M. McCallum (56, Apr.) finds that subnormal temperature usually indicates cranial abscess; constant high temperature indicates meningitis; while a fluctuating temperature indicates thrombosis of the lateral sinus.

J. Kerr (8, Oct. 13) reports two cases of sinus thrombosis. The jugular was ligated in each case. One recovered.

S. Lodge (9, Sept. 8) reports two cases with one recovery. In neither case was the jugular ligated.

Wanach (165, No. 4) and Witte (128, Aug.) report fatal cases of sinus thrombosis.

INTERNAL EAR.

Inflammation of the Labyrinth.—In *acute inflammation of the labyrinth*, M. M. Boulay (43, Oct. 20) recommends the subcutaneous injection of hydrochloride of pilocarpine in doses of

1-6 to 1-20 grain, depending upon the age and strength of the patient. Twelve doses should be given in twenty-four hours. Rest in bed is imperative.

Suppuration of the Vestibule.—Körner (13, No. 37) reports two cases of *suppuration of the vestibule*, which remained well after operation. The tendency of internal-ear suppuration is to spread to the fossa, and cause meningitis or cerebellar abscess. Suppuration may occur in the vestibule or semicircular canals and be shut off by granulations from the cochlea, or suppuration in the cochlea may be shut off from the vestibule in the same manner.

Meniere's Disease.—Moll (2, Oct.) classifies the conditions which may produce Meniere's symptoms:

1. Diseases of the external ear.
2. Diseases of the middle ear: *a* Acute, *b* chronic.
3. Diseases of the internal ear: *a* Hemorrhagic, *b* traumatic, *c* acute, *d* chronic, *e* toxic.
4. Diseases of the nervous acoustics: *a* Tabes, *b* neoplasms, *c* neuroses.

To calm labyrinthine hyperesthesia, Moll finds quinine sulphate best, with hypodermic injections of pilocarpine next.

Urban Pritchard (2, Sept.) makes a clear distinction between Meniere's symptoms which are due to irritation of the semicircular canals produced by some external influence, and Meniere's disease proper, which is due to some lesion of the posterior labyrinth itself. The irritation producing Meniere's symptoms may have its seat in the meatus, or in the middle ear, or it may be due to intracranial lesion.

Meniere's disease proper may be divided into:

1. Apoplectiform—In this form there occurs one severe seizure, which at once practically destroys the function of the ear attacked, the lesion being so extensive as to involve the anterior labyrinth (cochlea and saccule) as well as the posterior one (utricle and semicircular canals). The lesion is probably a hemorrhage or severe congestion.

In the majority of cases the direct cause can rarely be traced,

although an altered condition of the blood (as in leucocythaemia, kidney disease, or the like) undoubtedly acts as a marked predisposing cause. Sunstroke and acute inflammation such as occasionally occurs in the course of mumps or in tertiary syphilis, sometimes produce this condition. More rarely the cause is traumatic; thus, it has been seen to be brought about by a smart blow behind the ear with a golf ball, which, it needs hardly be explained, is a small, very hard ball driven with considerable force.

2. *Epileptiform*—This is characterized by recurrent attacks, as in the case of fits of epilepsy, hence its name. (And here it may be well to point out that both in the *apoplectiform* and the *epileptiform* varieties the names must not be taken to imply that the disease has any connection either with cerebral apoplexy in the first case, or with epilepsy in the second.)

It is Pritchard's opinion that the *epileptiform* condition resembles a definite disease, for it tends to run a course in two or three years, gradually passing off, as the functions of the ear become destroyed, unless arrested by treatment or by Nature herself; whereas the *apoplectic* form may be regarded more or less as an accident.

Debility, especially when produced by some long, tedious illness, is a common predisposing cause. And it is often found that patients who have had an attack in the past, from which they have recovered, are liable to have a recurrence some years after if they have suffered from any long, debilitating malady.

Gout and sunstroke are sometimes the exciting causes, but our knowledge on this point is very imperfect. Occasionally, though not nearly as frequently as is commonly taught, this form of Meniere's vertigo is associated with middle-ear catarrh.

The *apoplectiform* variety offers little hope of improvement by treatment. Rest in bed with large doses of bromides or hydrobromic acid, and free blistering, will sometimes restore a little hearing. For later treatment, pilocarpine is suggested.

In the treatment of the *epileptiform* variety the prognosis is more favorable. The tinnitus, it is true, will generally persist,

but it slowly diminishes in intensity; and though the hearing, as a rule, remains defective, in some rare instances it also is considerably improved.

Quinine in large doses, as first recommended by Charcot, has been rather extensively used, and apparently sometimes with distinct benefit; but probably this benefit has been chiefly due to its tonic effect. Salicine or salicylate of soda will, in a small proportion of cases, directly cut short the attack; ten-grain doses three times a day have been found sufficient for this purpose. But by far the most successful treatment is obtained by bromide in some of its combinations. Bromide of potassium or ammonium in 20-grain doses three times a day; or, better still, 40 to 60 minim doses of hydrobromic acid (acid. hydrobrom. dil.—B. P.) three times a day, taken well diluted, has proven more successful than any other treatment. It is estimated that 80 per cent of these cases have yielded more or less completely to this method, but it is important to remember that the dose must be large.

The general treatment should be of a tonic nature and not antiphlogistic, as recommended by some authorities. Thus, small doses of quinin, iron and strychnin are sometimes very useful, together with a generous diet.

In those somewhat rare cases which are associated with middle-ear catarrh, the ordinary treatment for that condition is of much service, and it is in these cases that some improvement in the hearing power may be hoped for.

Except when associated with middle-ear catarrh, very little improvement in the hearing power can be effected, but occasionally something may be done in this direction by blistering. This may also lessen the tinnitus. In a few cases where the patient is robust and circumstances are favorable, the pilocarpine treatment may be tried.

A case of *acute Meniere's disease* is reported by F. P. Weber (2, May). The patient was a man 31 years of age, suffering from advanced leucocythaemia. Death occurred six months after the attack of headache, vertigo and vomiting. The deafness continued until death. Post-mortem examination of the ears

showed that a portion of the scala tympani and the perilymphatic spaces of the semicircular canals were filled with newly formed fibroid and bony tissue. The scala vestibuli, canalis cochlea, and vestibule showed comparatively slight changes. No changes in the nerve trunk could be discovered.

Weber concludes, from a comparison of the various cases, that the pathological appearances presented by the internal ears after death differ in different cases, partly in accordance with the length of time which has elapsed between the onset of the acute aural symptoms and the death of the patient. In most cases of acute leucocythaemic affection of the internal ears, post-mortem investigation suggests that the following is the sequence of events: The commencement of the aural symptoms (vertigo, headache, vomiting, deafness) marks the occurrence of more or less extensive extravasations of blood in the semicircular canals and the cochlea, the process being doubtless nearly always more or less symmetrical and simultaneous in both ears. In such cases, though apparently lymphocytic infiltrations and hemorrhages may be found in various parts of the ears after death, the labyrinthine hemorrhage is probably the essential lesion which gives rise to the acute aural phenomena in question. Subsequently vascularization and organization proceed in the usual manner, with the result that the clot becomes gradually replaced by newly formed connective tissue, closely connected by its blood vessels with the endosteum of the bony labyrinth. In process of time (if the patient lives long enough), more or less ossification occurs in the newly formed tissue, and irregular processes of bone project inward from the walls of the bony labyrinth. At this stage of the pathological process transverse sections of the bony semicircular canals mostly show the membranous canals surrounded by a meshwork or by irregular masses of newly formed bone and fibroid tissue, completely filling up the perilymphatic spaces.

M. Yearsley (2, Aug.) reports a case of *central hemorrhage* connected with increased pressure in the ear, due to violent coughing.

The patient was a lady 54 years of age. During a sudden

and violent attack of coughing she experienced a sudden "crack" in both ears, which caused her considerable vertigo, deafness, tinnitus, and loss of memory. The vertigo was marked and continued so for twelve hours. Tinnitus was of a buzzing character, occasionally pulsating, worse after a meal, and improved on lying down. The deafness was a less marked symptom than the others, but with it the patient described the hearing as perverted, *i. e.*, each sound possessed a different tone to its ordinary one, and she could not recognize voices she was used to hearing frequently.

The following morning she noted that she had some weakness of the right upper and lower extremities, and that there was slight left facial paralysis.

At the consultation, fourteen days after the attack, the deafness, which especially implicated the left ear, was better, having improved during the past two days. The vertigo was still present, but much less marked. The tinnitus had improved, but was her chief complaint, the left ear being the only one affected.

On examination, the tuning fork placed upon the vertex was heard better by the left ear. Rinne's test was positive on both sides. Bone-conduction was impaired on both sides, about 25 per cent being lost.

Both membranes were dull, opaque and indrawn; there were no signs of any rupture, recent or healed. Movements to the pneumatic speculum were good on both sides.

The patient was ordered counter-irritation, and dilute hydrobromic acid in drachm doses three times a day. She continued this treatment for a fortnight, during which time she slowly improved, both as regards vertigo and tinnitus. One month later the vertigo and tinnitus had disappeared. There was still some deafness in both ears, especially the left, but no perversion of hearing. The facial paralysis had so far improved as to be but slightly marked.

Sclerosis of Internal Ear.—In a case of *progressive labyrinthine deafness*, dying from causes independent of the ears, F. Siebenmann, Bâle, (128, Apr.-June) examined the ears post-mortem

and made microscopic sections of the labyrinth. The conditions one week prior to death were: Drum membrane normal. Whisper heard in right ear at four cm.; left, 150 cm. Fork a' was lateralized from the vertex to the left (the better) ear, and was shortened ten seconds. Rinne a' positive on both sides, right approximately of normal duration (about twenty-five seconds); left not crossed (not carried over to the right ear); A perceived on both sides even on slight impulse. Owing to the critical condition of the patient, the examination could not be prolonged; the determination of E Rinne left, and the upper and lower tone limits had to be given up. The diagnosis of bilateral progressive nerve deafness seemed justified.

Twenty-four hours after death the two temporal bones were examined microscopically the external and middle ears seemed normal. The labyrinths were freed, and the superior semicircular canal opened; they were placed in formol, dehydrated, decalcified in hydrochloric acid, imbedded in celloidin, and finally cut into about 300 vertical sections, in the plane of the superior canal.

The following interesting conditions were found:

Right labyrinth (the lateral extremity, *i. e.*, the vertex of the lateral and posterior canals, is wanting): the nerve and membranous labyrinths seemed normal. In each of the two bony semicircular canals, partly preserved in the specimen, there was a focus of rarefaction, a third focus was found at the oval window, a fourth at the stapes plate, a fifth and sixth at the cochlear capsule.

The first focus extends from the canalis subarcuatus to the inner (concave) wall of the upper semicircular canal in its vertical portion and is adjacent to the endosteum; it partly limits the ampullar extremity in front, but does not invade the ampulla itself. To the medial side of the superior canal the first area terminates abruptly, on the lateral side it extends farther than is seen in the specimen. Posteriorly, it connects by means of prolongations with the second area, which is situated on the ampullated end of the posterior canal.

The third area surrounds the oval window above, below and

in front so that the posterior half of the lower margin and the posterior portion of the window remain free.

The stapedial plate is not thickened, but its vestibular cartilaginous covering is converted into bone in the middle (fourth area).

The fifth and sixth areas are in the cochlea. Both are situated deep and do not approach the tympanic mucous membranes. The fifth has a flat, sausage-like form, and is situated in the tympanic wall of the tympanic scale at the basal turn; it forms toward the vestibule the lower and toward the cupola the outer cochlear wall and also the lower margin of the internal auditory meatus, somewhat altered by osteophytic proliferation.

The sixth area is likewise situated at the limit behind the upper and lower part of the basal turn; it covers the latter in the vestibular scale, approaches the middle turn, and extends for a short space in the direction of the apex without invading the cochlear lumen.

The only connection between the areas is a slight one between the first and second. The remaining four are isolated.

The pathological diagnosis is: On both sides, areas of rarefaction in the bony capsule of the circular canals, of the vestibule and cochlea. Formation of osteophytes on the vestibula and tympanic surface of the oval window margin. Commencing ossification in the cartilaginous covering of the stapes. Additionally, on the left side, commencing ossification of the annular ligament (incomplete stapes-ankylosis).

In regard to the treatment, remembering the results of the autopsy, it can be positively stated that local medication, treatment of nose and throat, injections of medicines into the tubes, massage of the drum, myringectomy, tenotomy, and stapedectomy, excision of oval window, etc., as well as the use of potassium iodide, thyroidin, and pilocarpin, are of no avail and may aggravate the condition by their irritating action. Hence such treatment must be abstained from where the diagnosis of rarefaction of the labyrinth capsule is made.

Of the internal means, phosphorus alone seems to promise

anything. It usually is prescribed in an oily solution or Kasso-witz's emulsion, 0.01 per cent, and give 10 to 20, later 30 to 40 ccm. daily. If the stomach is very susceptible to fat, the phosphorus may be given in glutoid capsules, of which each contains 1 per cent phosphorus oil and is dissolved in the intestines. Small and long-repeated doses are preferable, as the phosphorus acts only when every gastric disturbance is avoided. The results with this treatment are too meager and not positive enough to permit of any conclusions.

F. Siebenmann (2, Oct.) believes that the *pathologico-anatomical conditions found in sclerosis* are in themselves enough to warn us against surgical interference.

1. The part most frequently and earliest affected is the wall of the labyrinth, especially the antero-superior part of the pelvis ovalis, which in the end leads to fixation of the stapes. This (fixation of the stapes) is due partly to the narrowing of the recessus and fenestra ovalis by the spongy change in the bone, partly to an ossification of the ligamentum annulare. A mass of spongy bone extends, in almost all cases, forwards and inwards to the endosteum of the lumen of the cochlea. When not too far developed, this disease presents Bezold's triad of symptoms.

2. It is well known that isolated foci occur in all or in individual turns of the cochlea, producing the symptoms of nerve deafness. This is probably more frequently due to chemical or physical alterations of the lymph than to the pressure on the nervus cochlearis. Combinations of nerve deafness and stapes ankylosis are frequent, especially in the later stages (dysacusis of Bezold).

3. The point from which these foci start and spread out is the intermediate zone between actual labyrinthine capsule and the bone derived from the periosteum.

4. Surgical treatment of the labyrinthine capsule in this disease would have to remove so much bone—even in the earliest stages at which diagnosis is possible—that a great part of the membranous labyrinth (at least in the cochlea) would be torn, opened and destroyed.

FUNCTIONAL DISEASES.

Hysterical Deafness.—Lannois and le Marc Hadour (126. Sept., '99) report two cases of *hysterical deafness*. The general characteristics of the condition may be summed up as follows:

1. Intensity of deafness incompatible with mere tympanic lesion.
2. Complete absence of perception by bone-conduction.
3. Absence of objective signs.
4. Insensibility of the drum-head. In old sclerotics the drum-head is sometimes insensitive.
5. Perfect symmetry of the deafness even at the outset. It is difficult to conceive a true central lesion producing this result.
6. Ephemeral character of subjective symptoms, if any. In central lesions the auditory nerve reacts with a specific sensibility manifested by vertigo and tinnitus.
7. Coincidence of hysterical stigmata.
8. Radical cure of the deafness.

Hammerschlag reports a case of *hysterical deafness* in a man of 30 years. After a full discussion of this case and reference to several others, he draws the following conclusions:

Disturbances of hearing in hysteria always appear under the guise of a paralysis of the auditory nerve, and show with the tuning fork the characteristic signs of a primary affection of the labyrinth. The semicircular canals never appear to be affected, and bone conduction is diminished out of all proportion to air-conduction. Further, air-conduction is much more impaired for the tuning fork than it is for conversation. The vestibular nerves are not involved. There is no anesthesia of the auricle, unless the whole of the affected side of the body happens to be anesthetic.

H. Gifford, Omaha, (39, Nov. 15, '99) reports two cases of *hysterical deafness* and one of *hysterical cussedness* with aural manifestations.

The latter case, a girl of 11 years, claimed that her ears bled every night. She was placed in the hospital and the ears band-

aged. The next morning the bandage was slightly disarranged and the cotton in the ear found to be somewhat bloody. The next night the ears were sealed with collodion. This time they did not bleed. She was accused of the deception, which she finally admitted, but would not tell where the blood came from, nor could the doctor, by a careful examination under chloroform, discover the source of the supply. Before leaving the hospital she admitted that the blood came from a diseased tooth. Gifford suggests that this case may throw light on some of the cases of alleged vicarious menstruation from the ears.

In the second case a young lady of eighteen years became totally deaf immediately after the discharge of pus in an attack of acute suppurative tonsillitis. No hearing test showed any appreciation of sound. Articulation became poor, like one who is forgetting how to talk. The facial expression was apathetic. An attempt to pass the Eustachian catheter was abandoned because the patient became faint. The patient returned to the office four days later with a history of another attack of tonsillitis and complete restoration of hearing immediately after the abscess "broke."

Physical examination showed no indication of the second tonsillitis, as claimed by the patient. After the return of hearing the patient proved to be a bright, sensible person. She had been subject to attacks of tonsillitis, which had caused some pain in the ears, and it was probably this suggestion which led to the hysterical deafness.

The third case was a man of 24 years. The deafness began suddenly, during an attack of severe pain in the ears. At first there was tinnitus and dizziness, which soon subsided. The deafness continued for three or four years, but suddenly returned under the influence of some magnetic or other "healer."

Another case of *hysterical deaf-mutism* is reported by Gordon King, New Orleans, (1, Nov.). The patient was a man 23 years of age. While attending a party where the so-called "spirit rappings" were a part of the amusement he received a profound mental and nervous shock. Soon afterward he was found uncon-

scious. When revived all his faculties seemed normal except speech and hearing. All the tests tried indicated that the deafness was absolute. An attempt was made to restore the functions by hypnotic influence. The patient was successfully hypnotized, but could not be made to hear or talk.

Several days later King spent considerable time having the patient try to pronounce words. After about an hour the power of speech gradually began to return. The next day auditory exercises were tried by means of the Houghton electric masseur, and a long cylindrical ear trumpet known as the conversation tube.

After long-continued exercise the patient admitted that he could feel the force of the sound and later began to gradually hear the noises. By the next day hearing was normal.

King reports a second case, in which a child of eight years became suddenly deaf and dumb, as the result of a nervous shock caused by witnessing an atrocious murder. Various attempts were made to restore the hearing, but without avail. After fifteen years she came to Dr. King, who found her absolutely deaf. The auditory exercises mentioned in the first case were tried, and while slight hearing power was developed, he was unable to improve it. A fork could be heard on the head and a loud voice could be heard through the tube.

King concludes that, were the deafness of nervous origin, time and disuse had made it permanent.

Taptas (11, Jan. 20) reports a case of *hysterical deafness cured by suggestion*. The patient was a Turk, 35 years old, who, after a quarrel, suddenly became deaf. The watch could not be heard. The tuning fork could be heard only by bone conduction. He complained of tinnitus and seemed depressed. There had been no dizziness or vomiting. The patient was assured that he could be made to hear by having the passage to his ears opened. Accordingly a probe, protected with cotton, was passed through a catheter into the nostril. While the probe was present and after its removal the patient could hear. He was assured that the cure would be permanent. He has remained well.

The points of special interest in this case are: 1. Absence of cutaneous anesthesia or other stigma of hysteria. 2. The presence of subjective noises in the head and ears. The latter is generally held to exclude hysterical deafness. In hysterical deafness the patient has forgotten the existence of his ears, consequently can hear no sounds, objective or subjective. The presence of tinnitus may possibly indicate that the patient had not completely forgotten the function of the ears, and therefore that the attack was not very serious.

AURAL EFFECTS OF NASAL ABNORMALITIES.

C. Baber, Brighton, (2, Sept.) says that *disease and abnormalities of the nose and naso-pharynx* may affect the ears in four different ways:

1. By interfering with the proper ventilation of the tympanic cavity, either from obstruction in the nasal cavities, producing exhaustion of the air in the tympanum, from closure of the mouth of the Eustachian tube by secretion or swelling of the walls, or from actual blocking of the tube by a new growth or the pathological enlargement of the normal structure. Obstruction of the nasal cavities also renders the ears more liable to sudden injury from currents of air passing up into the naso-pharynx, such as occurs in violent expiratory efforts, as coughing or sneezing.

2. By catarrh or other inflammatory affections of the nose or naso-pharynx spreading along the Eustachian tube.

3. By the actual passage of pathogenic organisms, such as those of tubercle, diphtheria, etc., up the Eustachian tube.

4. By interference with the normal action of the tubal muscles either from paresis or paralysis of the palatal muscles or general thickening of the mucous membrane of that part.

In those cases of chronic non-suppurative otitis media in which inflations temporarily improve the hearing, Baber finds

treatment of the nose or naso-pharynx, operative if indicated, is of advantage; while in those cases in which repeated inflations do not improve the hearing, treatment of, or operations in the nose for the sake of the hearing will result in disappointment.

E. Amberg (17, Dec. 15) estimates that 60 per cent of all ear affections are caused by diseases of the nose and throat.

M. Collier (8, Nov. 24) says: *Occlusion of the nasal opening of the Eustachian tube* leads to deafness, which means that the air is absorbed by the lining of the closed cavity and the drum-head is driven in by the unsupported atmospheric pressure. An examination of the drum-head will now show no fluid present, but in twenty-four to forty-eight hours, if the obstruction be maintained and air be not supplied to the tympanic cavity, and the intra-vascular pressure is not equilibrated, fluid is poured out and marked vascularity is apparent down the handle of the malleus and in the neighborhood of the short process.

In progressive middle-ear deafness, P. McBride (2, Sept.) finds two conditions of the naso-pharynx readily distinguishable, viz.:

1. Those in which the anterior and posterior nares are either normal or somewhat anaemic, with a very sharp differentiation of parts, *i. e.*, the Eustachian tubes standing out with great prominence, but without a trace of swelling or congestion, the outline being sharply defined.

2. Those in which we have some congestion of the whole naso-pharyngeal tract, including the Eustachian orifices. We may also find some amount of hypertrophy of the turbinals and a degree of deviation of the septum or spurs; but, as a rule, these conditions are not sufficient to attract the patient's attention to the nose.

In the catarrhal variety of progressive deafness, McBride would operate on the nose or naso-pharynx only when nasal symptoms are experienced by the patient.

C. M. Cobb, Boston, (128, Apr.-June) discusses the subject

of *Nasal Empyema*, and in closing calls attention to a number of conclusions of which the following refer to the ear:

1. The whole chain of catarrhal symptoms of the nose, the naso-pharynx, and of the ears is due to empyema of the nasal sinuses.

2. That chronic catarrhal inflammation of the middle ear may result from the catarrhal condition of the naso-pharynx, either by extension of the disease, by continuity of tissue, by the forcible blowing of the irritating secretion into the middle-ear cavity, or by closure of the Eustachian tube from the involvement of the mucous membrane in or around its entrance.

3. That there is no evidence that chronic catarrhal inflammation of the middle ear is caused by obstruction to nasal respiration, unless the obstruction is associated with empyema of the accessory sinuses.

4. That those cases of chronic catarrhal inflammation of the middle ear which are caused or made worse by naso-pharyngitis cannot be cured until the nasal empyema which causes the naso-pharyngitis is first cured, and that mechanical treatment directed to the ears alone is only palliative, and does not free the patient from the danger of an acute exacerbation of the disease.

Conclusions regarding *the effect of adenoids on the ear* are summarized by W. C. Braislin (26, July) as follows:

1. Ear diseases almost invariably accompany adenoid growths.

2. The first symptom of the presence of adenoids is frequently pain in, a discharge from the ear, or impairment of hearing.

3. The tendency of the ear diseases, complicating adenoids, to become chronic indicates a continuing etiological factor in their production. The subsequent improvement in the ear symptoms often taking place between the age of puberty and adult life follows the increase in size of the pharyngeal cavity and the partial or complete atrophy of the pharyngeal lymphoid tissue. The tendency to suffer from ear diseases still remains.

4. A symptom of impaired hearing due to adenoids is frequently a deficiency in mental development. Mental deficiency is often directly traceable to adenoids.

5. Mastoiditis appears among the complications of middle-ear suppuration with considerable frequency, these in turn being traceable to adenoids. It is probable that cerebral abscess and other complications of mastoiditis may have a similar starting-point.

H. Tilley, London, (2, Sept.) finds no improvement following intranasal operations for dry catarrh of the ears, but when the deafness is due to the moist forms of catarrh, varying in its degree from time to time, where auscultation during Politzerization reveals the presence of mucous in the tympanum, and when such conditions as these are associated with obvious intranasal lesions, such as hypertrophic catarrh, polypi, septal or other obstructions, then, and then only, can the treatment of these latter conditions have any influence in relieving the deafness, and in many cases excellent results can be obtained.

R. Lake (2, Sept.) believes that there are three conditions which will determine whether the removal of an intranasal obstruction will improve the hearing:

1. The duration of air-conduction.
2. The mobility of the malleus.
3. The effects of inflation.

Short air-conduction, immobility of the malleus, and no improvement after inflation, leave little hope of aid from intranasal treatment. The most useful intranasal treatment in such cases is done in the posterior half of the nose, as in removing posterior hypertrophies, which directly irritate the Eustachian tube. In cases of flaccidity of the membrana tympani, it is generally found that the nose on that side is stenosed, and it is better to remove the obstruction before treating the ear direct.

A. L. Adams (42, Mar. 25) believes that adenoids in childhood may be the causative factor in chronic catarrhal deafness later in life.

C. R. Holmes, Cincinnati, (6, Oct. 6 and 13) discusses the influence of hypertrophied turbinals upon the middle ear.

Dundas Grant (2, Sept.) has seen *improvement in a case of nerve deafness* following the removal of adenoids. He states his position regarding the relation of intranasal conditions to ear disease as follows:

There is a casual association between nasal obstruction and some forms of disease of the middle ear, especially the moist catarrh, but not the typical sclerotic catarrh. In some cases of nerve deafness, good results may follow the improvement in nerve tone produced by removal of nasal obstruction. In operations in the nose all precautions should be taken which will diminish the possibility of occurrence of suppurative inflammation of the middle ear. In doubtful cases nasal operation should be avoided, unless there are other indications apart from the affection of the middle ear.

D. McKeown (2, Sept.) thus accounts for the improvement in hearing which often follows the adenoid operation: 1. Devascularization of the naso-pharynx and its neighborhood. 2. The establishment of respiration by the physiological channel. 3. The development of the region involved. 4. The antagonistic influences of time on lymphoid structures. 5. The improved general health. Impairment of hearing from the reproduction of adenoids is remediable, but impairment of hearing from faulty cicatrization is practically irremediable.

J. Horne believes that the sudden and immediate improvement in hearing after removal of adenoids is due to the relief of venous congestion.

MALIGNANT DISEASES.

Sarcoma.—A case of *alveolar sarcoma* involving the petrous bone is reported by C. A. Ballance (2, June). The growth had produced paralysis of the seventh, eighth, ninth, tenth, eleventh and twelfth cranial nerves. When admitted to the hospital, the

patient had complete facial paralysis, severe pain in the ear and difficulty in swallowing. A polypus filled the meatus and there was a foul discharge from the ear. The left side of the tongue was paralyzed, taste was absent on the affected side, the voice was nasal, and fluids regurgitated through the nose. Only the right side of the pharynx was sensitive. The left vocal cord was fixed in the cadaveric position. There was also paralysis and atrophy of the sterno-mastoid and trapezius muscles. On opening the bone behind the ear, a sarcomatous tumor was found, which had destroyed the mastoid and petrous portions of the temporal bone. The growth was adherent to the dura mater in the region corresponding to the anterior and posterior surfaces of the petrous portion. Much hemorrhage attended the removal of the growth. Two months after the operation sound healing had occurred.

Fera (282, Vol. ix., p. 34) reports a case of *sarcoma of the left middle fossa of the skull*, extending to the anterior part of the posterior fossa, and invading the sphenoidal cavity. There was complete left facial paralysis, complete loss of hearing in the left ear, and paralysis of the left vocal cord. Later the muscles of deglutition became involved. Death was due to inspiration pneumonia.

S. A. Lutz (65, Feb.) reports a case of *small round-celled sarcoma* of the middle ear in a boy nine and a half years old.

Stetter (19, No. 3) reports a case of *carcinoma of the auricle* following a penetrating wound.

MISCELLANEOUS.

Acoustic Exercises for the Deaf.—In discussing *acoustic exercises for the deaf*, V. Urbantschitsch (2, Oct.) says:

Examination of the hearing power of deaf-mutes shows that often considerable remnants of hearing power are present, so that complete bilateral deafness is a rarity. On the other hand, comprehension of the sounds perceived is frequently absent;

moreover, deaf-mutes show a remarkable lack of attention to sound-impressions. The object of methodical acoustic exercises is, therefore, (1) to awaken attention to acoustic impressions; (2) to build up "differential hearing"; (3) to increase acoustic excitability.

The author describes the application of the exercises to cases of very weak hearing power and to the apparently totally deaf. Experience shows that even apparently totally deaf people ought to be tried. These exercises are not suitable for school children, on account of the great pains that must be taken and the time required.

The author then proceeds to answer several important questions:

1. What cases are suitable for methodical acoustic exercises? The exercises are always at first experimental, because the result cannot be foretold in any individual case. Success had been achieved even in deafness due to cerebro-spinal meningitis. The author is quite opposed to Bezold's view that all who cannot hear tuning-forks should be passed over, for even in such cases he has had good results.

2. How long should the exercises be continued? The more difficulty there is in arousing the perception of sound, the more are special exercises required, whereas these may be limited or omitted whenever ordinary sounds are perceived or the deaf-mute can hear his own voice.

3. What are the results of acoustic exercises? The result of the exercises will vary with the nature and duration of the daily practice; with the amount of hearing power already present, and with its capacity for development; with the intellectual condition of the patient, and with his interest in the exercises. In some cases in which the hearing power is apparently absolutely wanting a trace of hearing may be awakened which is capable of further development. As a general rule acoustic exercises raise the hearing-power, thus a mere trace of hearing becomes a hearing of tones, this again a hearing of vowels, words and sentences. The capacity for development of each individual case can not, how-

ever, be estimated; it varies even in the right and left ear, which at the start were functionally equal.

4. What is the practical worth of acoustic exercises? These exercises have a favorable influence on speech, on its hardness and its modulation, and also on the possibility of learning a dialect. As his hearing power improves social intercourse becomes easier for the deaf-mute, and at the same time the difficulty of earning his living diminishes.

Bezold (128, Apr.-June) gives the result of the re-examination after seven years of twenty-eight students in the Deaf-Mute Institute of Munich. The second examination was made with his continuous tone series and the results are summed up in this way: The number of totally deaf is less than before. Two deaf-mutes, however, lost considerable hearing in the interval, and it would seem as if we were justified in assuming that some cases always show slow advance of the destructive processes in the cochlea. Two children had more hearing than at first test, which may be ascribed to defective replies originally in one case and in the other to the greater power of the apparatus. The other twenty deaf-mutes showed about the same hearing at both tests, or a moderate increase averaging six semitones.

The first and very frequent condition (similar, or nearly similar limit for tones) proves that the boundaries of morbid foci on the cochlea are often sharply defined. The second condition (a moderate increase in the extent of the region for hearing) gives us an approximate idea of the amount to which our results may be influenced by differences in the intensity of the various tone-series employed. Nevertheless this influence has been much less than had been expected.

Although the re-examination discovered a few serious errors that had been made at the first testing, yet the number of coincidences was so great that there can be no doubt that even the youngest deaf-mute in the institute can be safely employed for the collection of statistics of the hearing power of deaf-mutes.

A. Costinin, Bucharest, (1. Jan.) has experimented with *acoustic exercises in the training of deaf-mutes*. The trumpet,

drum and human voice have been employed. He follows the method of Urbantschitsch in which the strained attention of the pupil is required. Ten cases are reported upon whom he had experimented. They were all cases of acquired deafness with some ability to appreciate the voice still left.

The pupil is first drilled on a single vowel and when an ability to hear that vowel is acquired other vowels are used. Combinations of vowels are made, then consonants are added until words and finally sentences are understood. Sometimes after the pupil had been hearing words and phrases a sudden relapse occurred, when it would be necessary to begin with a single vowel again. It yet remains to be seen whether the results will be permanent.

G. Kickhefel (128, Apr.-June) reports the results of the examination of the pupils in the deaf-mute school at Danzig, Germany. The method used in making the functional examination is given as follows:

The functional examination was made with the continuous tone-series and Urbantschitsch's harmonica, which was perfected by extending the scale in both directions, so that it comprised the full notes from C. to f⁵. More than ordinary precaution is necessary in the case of deaf-mutes to avoid error. After instructing the pupil to raise his hand every time that he feels a sensation of hearing when the tone-producing instrument is brought near his ear, he was placed before the examiner with his face turned away and his eyes covered with a broad bandage, so as to prevent him effectually from seeing what was going on. The hair was brushed back from the ear which was to be examined, and any hair that would not stay back was cut off so as to avoid any possible contact with the tone-producing instrument. The other ear was closed tightly with the end of the finger of an assistant, which finger had first been dipped into liquid paraffin. Care was also taken not to bring the instrument to the ear rapidly and suddenly, so as to avoid any movement of air which might be mistaken for sensation of hearing. Deaf-mutes are anxious to hear and always ready to believe they do hear. Their sense of touch is very acute, as is evidenced by the following incident. One of the boys raised

his hand regularly every time the fork was brought near his ear, whether it was vibrating or not. The bandage over his eyes was carefully examined and properly adjusted, the hair was brushed back of his ear, the tuning-fork was brought near his ear slowly and carefully to avoid any motion of the air, and in spite of all the boy would raise his hand when the tuning-fork was not vibrating. The mystery was solved at last when the tuning-fork was warmed in the hand. The cold metal had caused a sensation in the boy's ear which he mistook for hearing.

The examination proceeded in this careful way, generally beginning with the right ear and using the deepest tone of tuning-fork 6 of the continuous tone-series, and thence ascending and descending in the scale. Every tone in the continuous tone series that was heard was marked red in the schedule, the same as Bezold indicated it in his examination of deaf-mutes, whereas every perceived tone of the harmonica was marked blue. Those sections of the range of hearing which were perceived only when the tuning-forks were struck hard, or when the pipes were blown hard, were designated by broken lines. Thus each organ of hearing received its own schedule, which Bezold justly considers an advantage.

After completing the examination by means of the two scales the acuteness of hearing was tested in each octave with *c* and *g* of the unweighted tuning-forks of the continuous tone-series. The result of this test was put down in two decimals for each tone.

Following the example of Bezold, each ear was finally tested with a bell, the tone of which lay between d^4 and dis^4 , and recorded the results at the end of the schedule.

The examination was concluded with a test of the ability to hear the speaking voice, which was made during a special meeting to avoid fatiguing the pupils.

Bezold (13, May 15) finds many *deaf-mutes who have unsuspected hearing power for certain tones*. He urges that those with partial hearing be trained in separate classes and that such tones as they can hear be used.

When taught in the same institution with the totally deaf they only learn to speak like the latter and soon forget the little they had learned from hearing spoken language.

Deaf-mutes should be tested with some such apparatus as Bezold has designed to determine if there are tones which they can appreciate.

Congenital Deafness.—W. K. Brooks (11, Jan. 13) states that when the parents are both deaf-mutes ten per cent of the children born to them are deaf-mutes. When neither of the parents have deaf-mute relatives the percentage is much lower, while if both parents have deaf-mute relatives thirty-three per cent of the children are deaf-mutes.

A. H. Huth (8, Feb. 20), after carefully going over the statistics of the various asylums of Great Britain and the Irish census reports, concludes that the intermarriage of the deaf does not produce its due proportion of congenital deaf-mutes. Where there is an hereditary tendency toward deaf-mutism it is more liable to occur in the offspring when both parents are so affected than when but one has that taint.

Influence of Pernicious Anemia.—Schwabach (128, Aug.) reports seven cases of *ear disease dependent upon pernicious anemia*.

Three of the cases are reported in full. The first case was a woman forty-eight years of age who came to the hospital on Nov. 14, 1894, with pronounced subjective and organic evidences of pernicious anemia. On Nov. 23 numerous fresh hemorrhages were found in the fundus oculi, and on the same day the patient complained of deafness in the left ear. Tinnitus had been noticed for eight days past. Examination revealed slight injection of the drum-head and a small ecchymosis upon it. The functional tests resulted as follows: Watch not heard either by air- or bone-conduction, loud voice close to the ear; low tuning-forks not heard, higher ones shortened. Weber to left; Rinne negative. Right ear normal. The next few days improvement of general condition without change in ear symptoms. Dec. 5, pain in left ear, tenderness over tragus and mastoid process; purulent discharge from middle ear. These symptoms disappeared under

treatment, but hearing did not improve. In January severe general symptoms developed and patient died Feb. 8, '95.

Examination of the blood at the end of January showed a decrease of hemoglobin to 25 per cent; red blood cells 650,000 on the day before death; no increase in number of white corpuscles. Marked poikilocytosis; some nucleated red blood cells. The findings at the autopsy were: General anemia, fatty heart, myocarditis, swelling of the spleen, parenchymatous nephritis, old scars in the stomach, and swelling of the lymphatic glands. The anatomical examination of one ear could not be made.

Case two was a woman, fifty-six years of age, admitted Oct. 28, 1895. In March she first began to complain of ill-health and at the time of her admission presented numerous symptoms from which the following diagnosis was made: Essential pernicious anemia, insufficiency and stenosis of mitral valve. Percentage of hemoglobin was 20-25, number of red blood cells only 500,000; marked poikilocytosis. On Nov. 12 patient complained of noises and deafness which had appeared suddenly the day before in both ears. On the following day, pains in both eyes, especially the left. Ophthalmoscopic examination revealed numerous retinal blood spots. Vision normal.

Examination of ears: A. D.: Watch heard on contact, not heard by bone-conduction; whispered voice at 1 m. Low forks not heard; c⁴ shortened 15 seconds; c on right mastoid prolonged 2 seconds. Rinne negative. A. S.: Watch not heard at all; whispered voice, close to the ear. Forks not heard through air at all; through mastoid c shortened 4 seconds. Weber to right. Membrane on both sides appears dull; no reflex.

As the patient's general condition improved somewhat she left the hospital on Dec. 20, at her own request. Number of red corpuscles had increased to 1,716,000, and the hearing of the right ear was slightly better, whisper at 1.5 m. On Jan. 30, '96, she was readmitted in a moribund condition. Death followed on the very next day.

It was not possible to examine the ears again before the patient died. On Jan. 31 an autopsy was performed. All the

organs were found to be extremely pale and showed slight icterus; otherwise they presented no marked pathological condition. For purposes of microscopic examination the petrous portion of the right temporal bone was hardened in Muller's fluid, decalcified in 10 per cent nitric acid, rehardened in alcohol, embedded in celloidin, and cut in series perpendicularly to the long axis of the bone. Staining of the sections in haematoxylin and eosin. A number of specimens were stained according to Weigert in order to examine the auditory nerve. The results are as follows: In the mucous membrane of the Eustachian tube, particularly of its bony portion, was a moderate infiltration with small cells which increased in density in the direction toward the tympanic opening; vessels rather well filled, the epithelium everywhere well preserved. The mucous membrane of the tympanum presents in its anterior portion a fairly dense small-celled infiltration; it is slightly thickened, and is studded here and there with small hemorrhages. In the posterior portion the hemorrhages into the mucous membrane are more numerous, while the floor of the tympanic cavity is occupied by a considerable quantity of free, extravasated blood, as is also the niche of the oval window. Medially this extravasation goes over gradually into a rather thick layer of fibrin which, in turn, borders on some newly formed, vascular connective tissue. The latter extends over the mucous membrane of the base of the stapes and of the adjacent parts of the niche and promontory, the mucous membrane at these points being bared of its epithelium. At several other points of the tympanum a similar condition exists, and here and there a fibrine-purulent exudation covers the mucous membrane. Extravasations of blood are also present in the attic, and in the region of the posterior Troltsch's pocket. Here also, as well as around the malleus and incus, the mucous membrane is thickened, infiltrated with small cells, and filled with distended vessels; the same condition prevails in the cells of the mastoid, where extravasations of blood are to be seen. In addition to a small perforation in its anterior inferior quadrant, the tympanic membrane presents a subepidermal hemorrhagic vesicle 5 mm. long and 2 mm. thick,

whose bloody contents seem to be interspersed here and there with leucocytes. The cuticular layer of the membrane is very much thickened and contains numerous over-distended blood-vessels.

Nowhere in the cochlea, vestibule, semicircular canals and auditory nerve or its branches can the slightest trace of a hemorrhage or small-celled infiltration be recognized; nor does Weigert's stain reveal any pathological conditions in the nerve.

Case seven was a painter, fifty-seven years of age. He remained in the hospital only two weeks, when his improved condition allowed him to leave it. Examination of the blood had revealed the characteristics of pernicious anemia. Following a fall on his head while still a child the hearing of the right ear had been lost; the left ear remained healthy until recently, when he noticed pulsating noises on that side. Hearing A. D.: The watch and voice cannot be heard at all, neither by air- or bone-conduction. Fork c not heard through the air; on mastoid it can be heard, but shortened by 5 seconds. A. S.: Watch heard in contact only, but not through bone; whisper in 2-3 m. Hearing of fork c shortened by 17 seconds through air, by 3 seconds through mastoid. Weber lateralized to left. Otoscopic examination showed dullness of right Mt and retracted scar in posterior superior quadrant; on left side, dullness of Mt and foreshortening of hammer. Hemorrhages in the eyes present in this case also.

These results of the hearing-tests allow us to come to the conclusion that in cases 1 and 2 (Rt.) we have to deal with an affection of the sound-conducting apparatus. In case 7, however, the examination was too incomplete to permit the forming of even a probable diagnosis. Objective examination with the reflector showed a condition worthy of note in the first case only. It consisted in a small ecchymosis in the membrane and diffuse injection of the latter, followed later by suppurative otitis media with perforation of the membrane and a pulsating light reflex.

The correctness of the conclusion arrived at by means of the tuning-fork tests, which led to the diagnosis of the affection of the sound-conducting apparatus, was fully substantiated by the ana-

tomical examination of the right ear in case 2. The latter showed that while the sound-perceiving apparatus was entirely normal the middle ear presented in various regions anatomical changes in the shape, principally of extravasations of blood. These, especially by their encumbrance of the oval window, are ample, according to the generally accepted views, to account for the symptoms that were observed during life, namely, deafness, subjective noises, negative Rinne, etc. That the deafness and subjective noises were due to the hemorrhages around the oval window is made even more probable by the suddenness with which these symptoms appeared. The absence of vertigo throughout the patient's sojourn in the hospital is also in harmony with the anatomical findings, inasmuch as the labyrinth was entirely uninvolved.

Influence of Diabetes.—Eulenstein (223, Vol. 66) believes that there is no etiological relation existing between diabetes and suppuration of the middle ear. He finds the same causes operating to bring on severe complications in the otitis of diabetics as are found under other conditions, viz. :

1. The anatomical structure of the mastoid process; 2. The favorable soil produced by diabetes for pathogenic agents of various kinds; 3. The frequent arterio-sclerosis, inducing poor nutrition; 4. The severity of the infection.

M. Lanois (152, Feb. 25) calls attention to the *frequent association of otitis or mastoiditis and diabetes*. Furunculosis, eczema and desquamation of the external auditory canal, if persistent, should lead to the examination of the urine.

When mastoiditis occurs in diabetic patients, antidiabetic treatment should be instituted and an operation done under rigid asepsis.

Anesthesia of Membrane.—A. A. Gray (8, Apr. 21) has experimented with several different *solvents for cocain* in his attempts to anesthetize the drum membrane.

The preparation he finds most satisfactory is five parts cocain in fifty parts each of rectified spirits and anilin oil. This solu-

tion he finds penetrates the epithelial layer of the drum membrane and produces complete anesthesia.

One case of acute middle-ear catarrh is reported in which the membrane was acutely inflamed and distended from pressure of fluid within the middle ear. In this case a 10 per cent solution of cocain in alcohol and anilin oil was left in the ear for six or seven minutes, then drained away and the membrane incised with absolutely no pain.

The first case on whom the preparation was tried is reported as follows: "A girl aged seven was brought to the Glasgow Central Dispensary on account of deafness of the right ear. The tympanum was half filled with exudation, and as the condition had only improved slowly in spite of treatment it was decided to evacuate the fluid by incision of the membrane. A few drops of the 5 per cent solution were allowed to run down into the meatus and allowed to remain in contact with the membrane for five minutes. The excess was mopped out and an incision made behind and below the handle of the mallet and the contents evacuated. There was no pain whatever during the operation, nor were there any unpleasant after results."

When the membrane is greatly thickened, as is sometimes the case in sclerosis, a better preparation is:

Cocain	10 parts
Absolute alcohol	30 parts
Anilin oil	60 parts

The use of alcohol and anilin oil in the canal greatly increases the transparency of the membrane.

Simulated Deafness.—Hummel (18, Nov. 7) has devised a scheme for *detecting simulated one-sided deafness*. He has a speaking tube fitted tightly into each ear. Then two persons with similar voices talk at the same time. They may use the same sentence, a slightly different sentence, or the words may be entirely different. The one-sided deaf repeat correctly what one person says while the simulator will be confused.

In the *detection of simulated unilateral deafness*, M. Courtrade (2, Feb.) finds that it is much more difficult for a person to determine which ear hears a deep-toned fork, than if a high-pitched instrument is used. Courtrade's method of detecting the malingerer is to use a three-way tube, one terminal passing to each ear and the third to the vibrating fork. The patient is directed to announce the cessation of the sound. The operator, unobserved by the patient, compresses the tube leading to the admittedly sound ear. If the patient's claim of deafness is genuine he will report the cessation of sound the moment the tube is compressed. The malingerer, not being able to determine readily that the sound is heard by the alleged deaf ear, fails to report promptly and thus incriminates himself.

Position During Operation.—In giving an anesthetic for nasal, pharyngeal and aural operations French (6, Oct. 13) advocates the use of a chair with a tilting back so that the operation may be done with the patient in the upright position. The advantages claimed are: 1. The very considerable reduction in the amount of blood lost. 2. The reduction of the chances of ear complications by securing complete drainage of the nasopharynx of blood. 3. The ease, thoroughness and accuracy with which operations can be done in the shortest time, by the retention of the usual relationship between operator and patient.

Facial Paralysis.—W. R. Murray, Minneapolis, (128, Feb.) reports two cases of *facial paralysis from acute otitis media*. Both recovered without surgical treatment. After quoting Lake, Birch and Politzer on facial paralysis Murray says:

"The anatomical position of the nerve during its passage through the Fallopian canal accounts for the somewhat unusual complication of facial paralysis attending an otitis media, and, when present in an acute catarrhal case, is due to the direct extension of the inflammatory process to the nerve sheath which, lying within the unyielding walls of the Fallopian canal, may be subjected to sufficient pressure, from a swelling attending a slight inflammation of the nerve sheath, to interfere, partly or com-

pletely, with the functions of the nerve, and is probably due to some abnormality of the bony structure surrounding the nerve, probably in the neighborhood of the fenestra ovalis, in the internal wall of the typanum, where the canal turns from its horizontal course and passes downwards to its exit at the stylo-mastoid foramen."

J. R. Lunn (8, Jan. 20) reports two cases of *facial paralysis due to ear disease*. Both cases were absolutely deaf on the affected side and in each there was marked impairment of taste.

Gelle Test.—Gustav Brühl (128, Feb.) believes that the *Gelle test* is a reliable means of determining the mobility of the stapedial foot-plate in the oval window, and when combined with the Rinne test completes the differential diagnosis between nerve deafness and middle-ear disease. After describing a number of experiments he sums up his conclusions:

1. If the Rinne test is positive, then Gelle is also unexceptionally positive, and the impaired hearing is due to nervous affections.
2. If the Rinne test is negative absolutely and totally or up to c', the Gelle test is unexceptionally negative, and the impaired hearing is due to stapes ankylosis.
3. If the Rinne test is negative below or up to c limit, and positive above it, then the Gelle test decides whether a stapes ankylosis exists or not.

M. Breitung (19, June) finds *Gelle's test of value in prognosis*. The amount of pressure on the air bag necessary to obtain a positive result indicates the firmness of the ankylosis of the foot-plate in the oval window.

During treatment by vibratory massage improvement is indicated by the lessened pressure necessary to make Gelle's test positive.

Rinne's Test.—Bezold (128, Dec.) has used Rinne's test in all appropriate cases for twenty years and has convinced himself of its reliability and ease of application.

Schwendt (203, Vol. 49, p. 1) has tested normal ears with

the improved Edelmann's Galton whistle and finds that a man aged sixty-nine could hear 37,000 double vibrations in a second, and that younger persons could appreciate more than 48,000 vibrations.

Acumetry.—In an article entitled "*Acumetry—A Plan for International Notation*," M. Schiffers (1, Oct.) draws the following conclusions:

1. The watch and all sorts of acumeters without gradation cannot serve for a fundamental minima notation. 2. The employment of the tuning-fork is still the best way of measuring the hearing of a subject. The optical method constitutes a decided step forward and may be further perfected; it is the most exact means of making a minima acumetric notation. It is applicable to all cases. 3. The method of noting the time during which a given tuning-fork is heard has many supporters. The tuning-fork used must be named—that is to say, the number of its vibrations per second. The result must be expressed by a fraction whose denominator represents the time of perception of the normal ear, and the numerator that of the ear examined. 4. The test of Weber retains all the value which has been credited to it up to this time. 5. Rinne's experiment, if used at all, must be modified. The foot of the fork should be held in front of the otoscopic tube in order to get a proper comparison between aerial and bone-conduction. 6. Examination by means of articulate language is indispensable, especially in children. Here Wolf's experiments must be kept in mind. Vowels and consonants—omitting sibilants—spoken in a whisper, using only residual air, are to be employed. A method of giving a uniform tone to the voice is a desideratum; without it all vocal measurements lack precision. In noting results the words or letters whispered, and the distance at which they are repeated, are to be recorded.

In writing on the same subject, A. Hartman (1, Oct.) says the tuning-fork is the only instrument we possess up to the present time for making sound waves appreciable to the organs of hearing by both solid and aerial media. In making the examination the

duration of perception must be determined, and the number of vibrations of the tuning-fork per second must be noted. In writing out the formula the first number indicates the number of vibrations of the tuning-fork; then follows a fraction whose numerator indicates the number of seconds the affected ear hears the fork, and the denominator indicates the number of seconds a normal ear should hear it.

In order to secure a standard by which to measure the time an ear can hear the vibrations of a given fork, M. Bonnier (2, Feb.) proposes that a polished needle be attached to one limb of the fork and the time the needle ceases to have a striated appearance be taken as zero. The time the normal ear can hear the fork after the zero point is reached is taken as the standard, and the amount of impairment is measured by comparing the time the defective ear hears the fork with that of the normal ear. The greatest source of inaccuracy in the present method of measuring the time different ears hear the same fork is the difficulty in securing a uniform initial vibration from which to measure.

Functional Examination.—Bezold (128, Feb.) describes his hearing tests which consist of clamped forks for the lower six octaves, with the addition of two organ pipes and a modified Galton whistle.

While the whisper is almost universally used as a test, and while its intensity can be regulated by the exclusive use of the reserve air remaining after forced expiration, a further functional examination is necessary:

1. Where a discrepancy exists between the objective otoscopic examination and the diminution of the hearing for speech.

A rapid sinking of the hearing power in the course of an acute or chronic purulent otitis is of importance in the diagnosis and treatment. If, for example, during our observation complete monolateral deafness appears in a short time in the suppurating ear, as is shown in labyrinth necrosis, from this symptom alone in an acute purulent otitis, operation is urgently indicated.

2. A functional examination cannot be neglected in the

many cases of moderate or slight deafness where the tympanic membrane and the middle ear show no objective changes.

The procedure is as follows:

a. Determination of the upper and lower limits with the continuous tone series.

b. Measuring the hearing duration (usually for A and a') from the vortex after Schwabach.

c. Rinne's test (usually with a') with the difference noted in seconds between air- and bone-conduction.

d. Weber's test.

3. To obtain a satisfactory picture of the diminution of hearing in the range of the tone scale in high-grade deafness and in one- or double-sided deafness for speech we must employ, besides the above, the entire system of clamped forks, and in bilateral deafness the determination of the air-conduction with pipes in small intervals before each ear.

If we desire to demonstrate partial defects for separate areas besides real islands and gaps, the tedious determination of the hearing duration is necessary—that is, the time during which the fork can be heard by our own or a normal ear after its perception by the affected ear has ceased.

This latter examination is also necessary to determine one-sided complete deafness. With this method, necrosis of the cochlea can be diagnosed long before the sequestrum appears.

The examination with the entire tone series for air-conduction is of value not only theoretically but practically in the examination of

4. Deaf-Mutes.—The hearing remnants found in the ears of deaf-mutes, which must not only be demonstrated but the hearing duration tested, give us the only indication of the possible value of speaking instructions.

That the teachers of the deaf-mute schools have not a sufficient knowledge of the hearing remnants possessed by their pupils is proven by examinations, which show that there are several deaf-mutes with remnants of hearing, who were considered to be

perfectly deaf because they either did not speak at all or imperfectly. After an examination with the tone series, and after a suitably arranged plan of instruction, making use of the ear, had been carried out for a year, these pupils belong to the best speakers among those instructed by ear.

To permit a functional examination of every doubtful case it is necessary to limit the examination to that which is of greatest value in the diagnosis; this will explain the selection of the above tests.

A. Schwendt (128, Apr.-June) reports three cases of sharply circumscribed sound defects in the hearing field.

Menstrual Hemorrhage from the Ear.—P. Bourlon (11, Jan. 27) has collected the records of twenty-three cases of *vicarious menstrual hemorrhage from the ear*. The hearing is never affected by the hemorrhage. He accounts for the phenomenon on the theory that there is paralysis of the small vessels, of central origin, due to hysteria. In some of the cases the hemorrhage was bilateral. It rarely occurred with any regularity and was usually preceded by heaviness, pain in the head, vertigo and sometimes noises in the ears. The duration varied from one to six days. The age of the subjects was from one extreme to the other of the menstrual period. In most of the cases the hemorrhage from the ear preceded the menstrual flow, but ceased with the beginning of the vaginal flux.

The indications for treatment are: 1. Let the ear absolutely alone. 2. Restore the normal menstrual flow if it has been checked. 3. Adopt measures for the general improvement of the nervous system.

Gossard, Paris, (1, Nov.) reports a case of *bilateral auricular hemorrhage* in a woman sixty-three years old. The first bleeding was said to be the result of a lively fit of contrariness. The bleeding occurred at irregular intervals, varying from six days to a month. Gossard regards the hemorrhages as due to neuropathic troubles.

Deafness from Brain Tumor.—A. A. Gray, Glasgow, (2, Jan.)

reports a case of *brain tumor causing deafness and other remarkable symptoms.*

The tumor was about 4 by 1.7 centimeters and involved the upper portion of the pons and medulla as far as the middle of the floor of the fourth ventricle. It was entirely to the left of the median line.

The patient died thirty-one days after the appearance of the first symptoms. Two weeks after the trouble began the whisper could be heard at two inches in the left ear and the watch tick only on contact.

Weber's test showed sound heard best in right ear. In the right ear Rinne's test showed sound perceived thirty-five seconds longer by air- than by bone-conduction, while in the left ear the fork was heard seven seconds longer by bone- than by air-conduction. The result in Weber's test was due to involvement of the auditory center. The result in Rinne's test was contrary to what would be expected and was due to a retraction of the membrana tympani. This was undoubtedly due to closure of the Eustachian tube from paralysis of the muscles of deglutition.

[Reports giving the comparative time the fork can be heard by air-conduction and by bone-conduction in Rinne's test, to be of value, should state the number of seconds the given fork can be heard by the normal ear.—Ed.]

Deafness from Concussion.—A. Duane (128, Feb.) reports a case of complete deafness produced by the concussion due to firing a heavy gun. A year afterward no appreciation of sound could be discovered.

Another case of *deafness from the concussion due to gun firing* is reported by R. Lewis (128, Feb.). The patient, a sailor, had the right side of his face within a few inches of a saluting gun when it was discharged. The man was knocked down, senseless, and on regaining consciousness was unable to walk on account of dizziness. Hyperemia of the membrane and total loss of hearing in the right ear followed. At the end of thirteen days the voice could be heard at one foot in the affected ear.

Vertigo the Cause of Drowning.—F. Danziger (19, Nov., '99)

discusses the relation of defective tympanic membranes to sudden deaths from drowning. He reports a case of a man with such a defect who was suddenly seized with vertigo while bathing and was compelled to leave the water. The vertigo continued until the water was removed from the tympanum. Danziger believes that many of the sudden deaths from drowning are due to vertigo caused by the entrance of water into the middle ear.

Reciprocal Influence on Opposite Ear.—E. B. Dench, (6, Sept. 9, '99) in writing of tympanic operations for the improvement of hearing, mentions the improvement that often follows in the opposite ear.

As an illustration of the reciprocal influence of the affected upon the normal ear Ouspenski reports a case of bilateral deafness caused by acute unilateral otitis. A wad of wool was found in the inflamed ear pressing upon the membrane. After the removal of this foreign body hearing returned to normal in both ears.

Electricity in Eustachian Occlusion.—A. B. Duel (123, Apr.) treats *occlusion of the Eustachian tube* with electricity. He uses a gold wire bougie, Nos. 2, 3 and 4, French scale, extending an inch and a half beyond the end of an insulated catheter, and applies a two or three milliampere current for five minutes. Fifty cases are reported. His conclusions are: It is our duty whenever there is stenosis of the Eustachian tube to remove the obstruction as soon as possible. In every instance where the obstruction is due to an organized exudate the best method for its removal is electrolysis for the following reasons: 1. It is more rapid.—In several instances one application of the electrolytic bougie has been sufficient to cause reabsorption of the deposit, and in the majority of cases only a few applications have been necessary to secure a patent tube. 2. It is more efficient.—The disappearance of the exudate results from electrolytic action and not by mere pressure, as in other methods of dilating strictures, and consequently requires less force. There is, therefore, less danger of traumatism. The electrolytic bougie has been easily passed through strictures which were so firmly organized that it was im-

possible to pass a cotton bougie. 3. The results are more permanent.—A stricture once removed by this method is permanently removed. The primary cause, acting again, may bring about its reappearance, but by careful attention to proper treatment a large percentage of the tubes may be kept patent. The prognosis in any given case depends largely upon the amount of injury to the tympanic structures. Where inflation is followed by marked temporary relief of deafness, subjective sounds or vertigo, one may expect brilliant results from the establishment of the patency of tubes. Where no temporary improvement follows inflation much may be accomplished, although the results are by no means so certain.

Objective Tinnitus.—A case of chronic suppurative otitis media is reported by R. Payne (1, Aug.) in which a *clicking sound* could be distinctly heard in the patient's ear. The sound could be heard fifteen feet away. It was not constant but would continue for a minute or two, and occurred several times a day. It was not synchronous with the pulse, the movements of the jaw, or the perceptible movements of any adjacent structure.

[In a recent letter to the editor Dr. Payne states that after removal of the ossicles and membrane and clearing out the mastoid the objective noises entirely disappeared.]

Boulai (81, Vol. 13) has seen two cases in which *distinct crackling noise* could be heard. The noise occurred about 130 times a minute and seemed to be due to spasmodic contraction of the tensor tympani. In one of the cases a corresponding movement of the drum membrane could be seen.

Toxic Deafness.—H. Guleke (79, Nov. 15, '99) reports a case of deafness as a result of an accidental overdose of phenacetine. About 100 grams of the drug was given in twenty-four hours. Total deafness was one of the toxic results.

Aural Syphilis.—Castex (205, May) has seen seven cases of *acquired syphilis of the ear*. He concludes: 1. Acquired aural syphilis occurs usually in man, wherein it differs from congenital syphilis. 2. Prognosis is worse the earlier the aural symptoms

appear after the chancre. 3. The cases where the inner meatus is affected are unusually grave. 4. Treatment is the usual one, combined with pilocarpin injections.

A. J. Petyt (9, March 17) reports the case of a man who while using a pin to remove cerumen from a suppurating ear, accidentally lost his hold on the pin. While the doctor was preparing to search for it the patient declared he felt it in his throat. Two days later, while defecating, the patient felt a pricking sensation. Upon examining the stools the pin was found.

J. H. Coulter, Chicago, (137, Jan.) believes that greater attention should be given to the *relation of chronic ear diseases to life insurance*. Until five years after the cure of a chronic suppuration the applicant should not be eligible.

G. Ferreri, Rome, (1, Aug.) has not been able to demonstrate that the cataphoric action of the galvanic current can cause the absorption of either myotics or mydriatics in the auditory canal or middle ear. In experimenting with the myotics he used a .2 per cent of eserine and 1 per cent hydrochlorate of pilocarpine in boiled water. The meatus was filled with the solution and a current of five milliamperes applied for one hour. The negative pole was used in the canal at one time and the positive pole at another, but at no time could the characteristic pupillary reaction be produced.

In experimenting with mydriatics he used at different times a .1 per cent sulphate of hyoscyamine, a .3 per cent sulphate of atropine, a .4 per cent sulphate of duboisine, and other mydriatics dissolved in distilled water. The current was applied in the same manner but without results. The same experiments were tried upon individuals whose drum membrane had been destroyed completely or in part by previous suppuration, but in no case was he able to discover either myotic or mydriatic reaction.

A solution of the base alkaloid in non-acidified oil was used but the result was still negative.

J. H. Farber (7, Dec. 23, '99) gives inability to hear the watch while the voice is heard well, as a "new diagnostic symptom of Eustachian stricture."

He believes that all cases of middle-ear troubles are due to some one or other of the dyscrasias: Syphilis, scrofula, rheumatism, etc.

He regards tinnitus as always due to more or less ankylosis of the joints of the ossicles with each other and of the stapes to the oval window. He punctures or removes the drum and says the noise stops in nearly every case. If it does not stop it is because there is firm ankylosis or retraction of the drum and the whole does not admit the waves against the inner wall and the drum and ossicles still receive the vibrations.

Hamilton Stillson (7, Nov. 10) has conducted a series of experiments in order to determine the *relation between audition and the circulation of blood in the head*. While suffering from impairment of hearing and tinnitus due to tubal edema, Stillson found that when he was in the recumbent position both the tinnitus and the impairment were increased. When suspended head downward the power of audition in the normal ear was at first increased, then a slight subjective noise was heard, after which a dullness of hearing followed, accompanied by a cessation of even the subjective sounds.

Rotating the head from side to side upon its vertical axis for a minute or two caused nausea, dizziness, a lowering of the hearing acuity and a peculiar, bell-like tinnitus.

Nodding the head violently up and down caused the same phenomena, though to a less degree. The tinnitus was not bell-like but rasping in character, as though caused by the rubbing of the bones of the neck and the muscles against their sheaths.

Pressure upon the tip of the mastoid increased the tinnitus and raised its pitch. Prolonged pressure upon the mastoid of the normal side caused no tinnitus at the time, but soon afterward a temporary tinnitus and mental hebitude occurred. Pressure upon the mastoid lessened the hearing acuity, especially for the high-pitch sounds.

H. Knapp (128, Aug.) gives his personal experience in an acute attack of autophony.

Mouret (11, Apr. 28) discusses the subject of noises in the

ear due to spasmodic contraction of the tensor tympani, or of the dilators of the Eustachian tube. Such noises are low in tone, intermittent in character, and usually commence and end suddenly. Giddiness often accompanies the tinnitus. Dilation of the Eustachian tube from muscular contraction is accompanied by a cracking noise and a sensation of stretching in the throat. The sound of respiration and the voice becomes audible.

In the treatment of these cases the galvanic current is of value, but much time is required to accomplish a cure. The bromides and iodides combined with arsenic give better results.

The cause of spasmodic contraction of these muscles is attributed to bodily or mental fatigue and overstrain.

[The editor has seen cases in which tobacco smoking, and perhaps the excessive use of coffee seemed to bear an etiological relation.]

Larionow (209, Dec., '99) points out the fact that in diseases beginning with marked psychical defect, as in secondary insanity or dementia, the musical faculty of the cerebral cortex remains intact. He concludes that there is a separate and distinct musical center existing in the cerebral cortex.

According to Villaret (206, Mar.) most of the cases of diseases of the ear in the German army occur during the months of June and July. The prevalence of ear disease during these months is attributed to bathing. Diving is especially liable to cause injuries to the drum membrane.

Cowen (128, Feb.) reports a case of frequently *recurring transitory deafness* and fullness in the ear on one side, which appears during the act of speaking and was relieved by pressure upon the tragus. Otherwise there was good hearing on that side and the membrane was normal. The Eustachian tube was open constantly. There was no tinnitus. Treatment did not relieve the condition. Cowen thinks the condition may be due to a relaxed drum membrane falling upon the stapes, and that traction upon the tagus pulled the membrane away and relieved this condition.

A case of *pseudomeningitis, due to lumbricoides*, reported by

Meriel (204, July 1) calls attention to the importance of investigating the possible as well as the probable causes of meningeal symptoms.

A child ten years of age with a purulent otitis media was taken sick with all the symptoms of meningitis, which was supposed to be due to extension of the inflammation from the middle ear. After the meningeal symptoms had continued several days without change search was made for other causes, when lumbricoides were found in the stools. After the expulsion of the worms the meningeal symptoms rapidly subsided.

As a *test for hearing* A. A. Gray (194, Vol. 2, '99) has constructed small brass bars suspended at each end by a cord and excited by drawing a well-resined violin bow across them. These bars produce tones of from 8,000 to 12,000 vibrations per second. The notes are much louder than Galton's whistle or König's cylinders, and are free from the hissing of the former and the click of the latter. The results obtained by testing with the low notes Gray finds much more reliable than when the high notes are employed. In explanation of the loss of hearing for the low tones in middle-ear disease he offers the following: "The loudness of a sound is, within wide limits, and certainly in the cases under consideration, proportionate to the energy transmitted to the fluid in the labyrinth. Now, since the mass of the ossicles is constant, the energy transmitted is proportional to the square of the velocity with which the ossicles move. Further, the velocity is proportional to the frequency and the amplitude of the vibrations which the ossicles undergo. When, therefore, the frequency becomes diminished by lowering the pitch, the amplitude of the vibrations must be increased in order to obtain the same amount of energy. Now, it is just in cases of middle-ear disease that the amplitude of the vibrations is restricted; hence in this class of diseases the hearing power is much more seriously affected for the low tones than for the high ones."

In the examination of the ears of infants, B. A. Randall (7, Mar. 31) often uses no instruments but lets the sun shine past his head into the canal.

B. von Gaessler (128, Dec.) contributes an article on *aural complications of scarlet fever* and reports twelve post-mortem observations. The great importance of this disease and its consequences to the ear has impelled otologists to study it carefully, and they were the first to point out the danger to the function of the organ and even to life. Gaessler believes that his observations tend to show a relation of middle-ear disease to the exanthem. Simple hyperemia, secretory process and fibrinous exudate form the progressive states of the ear disease due to infection.

C. H. May (144, Mar.) estimates that 10 per cent of all deafness is due to ear complications following the exanthemata, and that 20 per cent of all cases of scarlet fever have ear sequelae. Attention to the nose and throat during the course of the disease and early paracentesis, when the ear becomes involved, will greatly lessen the serious consequences.

NEW INSTRUMENTS.

Emil Amberg (59, Mar.) has designed a forceps and gauze carrier consisting of a rod within a tube, the ends of which serve as jaws of a forceps. The small calibre of the tube makes it possible to use the instruments in a small space, as in the ear or nose. The instruments are small, but the jaws possess remarkably great strength.

E. L. Oatman (6, Jan. 13) has constructed an ear basin with a hollow handle which projects above the bottom and acts as a trap. The fluid passes out through the handle while the solids remain in the bottom.

Mahu (81, Vol. 13, No. 1) has devised a speculum to overcome the difficulty in examining the membrane when the canal is swollen from eczema or furuncle.

E. B. Dench (128, Feb.) has devised a tuning fork stand for holding Bezold's continuous series of tuning forks and whistles. It consists of a vertical shaft, about three and a half feet high, mounted on a triangular base. Upon this shaft are fixed three

plates which hold the various forks. These revolve around the central shaft, so that any instrument may be removed without disturbing the others. This applies not only to the forks but to the whistles and pipes as well.

Hamilton Stillson, Seattle, (7, Jan. 20) has devised an electricaural masseur. A soft iron core is wrapped in a coil of insulated wire and inclosed in a cylinder. Near each end of the core is placed a metal diaphragm which has air-tight packing between the edge of the diaphragm and the cylinder. The ends of the cylinder are sealed, leaving an air-chamber between the diaphragm and the ends of the cylinder. There are thus produced three air-chambers, the central one, the one between the diaphragms, enclosing the magnet, and one at each end of the cylinder between the diaphragms and the ends of the cylinder. Leading from the central air-chamber is a tube which ends in an ear nozzle. When a current of electricity is sent through the coil the diaphragms are alternately attracted and released, thus compressing and rarefying the air in the middle air-chamber and through the tube the air in the external auditory canal. A current interrupter is provided to regulate the rapidity of the vibrations. Connected with the air-chamber is a stout rubber bulb for rarefying the air in the external auditory canal before the vibrations begin. Rarefying the air in the canal puts the membrane and adhesions which have formed on the stretch and the vibrations have a tendency to jerk the adhesions loose. The bulb can also be used for condensing the air in the canal before the vibrations begin. After several years' experience with this instrument its designer is able to report excellent results from its use.

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1. Laryngoscope. St. Louis.
2. Jour. of Laryngol., Rhinol., Otol. London.
3. Ann. of Otol., Rhinol. and Laryngol. St. Louis.
4. Jour. Eye, Ear and Throat Diseases. Baltimore.
5. Archiv. für Rhinol. u. Laryngol. Berlin.
6. New York Med. Jour.
7. Jour. Am. Med. Asso. Chicago.
8. Lancet. London.
9. Brit. Med. Jour. London.
10. Rev. Internat. de Rhinol., Otol., Laryngol. Paris.
11. Rev. hebdom. de Laryngol.
12. Monatschr. f. Unfallheilkunde.
13. Münchener Med. Woch.
14. Wiener klin. Woch.
15. Wiener klin. Rundschau.
16. Therapeutic Gazette. Detroit.
17. Phil. Med. Jour.
18. Deutsche Med. Woch. Leipzig.
19. Monat. f. Ohrenheil. Berlin.
20. Deutsche Praxis.
21. Zeitschrift f. Krankenpflege.
22. Vrach. Warsaw.
23. Pacific Med. Jour. San Francisco.
24. Kan. Med. Jour. Topeka.
25. Canadian Med. Review. Toronto.
26. Brooklyn Med. Jour.
27. Philadelphia Polyclinic.
28. Clinique. Chicago.
29. Yale Med. Jour. New Haven.
30. Memphis Med. Monthly.
31. New Eng. Med. Gazette.
32. Internat. Med. Magazine. Philadelphia.
33. Med. Review of Reviews. New York.
34. Med. Times and Register.
35. Canadian Lancet. Toronto.
36. New Eng. Med. Monthly. Bridgeport, Conn.
37. Med. Summary. Philadelphia.
38. Med. Council. Philadelphia.
39. Western Med. Review.
40. Kan. City Med. Jour.
41. Scottish Med. and Surg. Jour.
42. Med. Age. Detroit.
43. Jour. des Praticiens. Paris.
44. Louisville Med. Monthly.
45. Atlanta Med. and Surg. Jour.
46. Charlotte Med. Jour.
47. Birmingham Med. Review.
48. Cincinnati Lancet-Clinic.
49. New Orleans Med. and Surg. Jour.
50. Med. Bulletin. Philadelphia.
51. L'Union med. du Canada. Montreal.
52. L'Echo med. du Nord.
53. Virginia Med. Semi-Monthly. Richmond.
54. St. Petersburg med. Woch.
55. Archiv. f. klin. Chirurg. Berlin.
56. Canadian Jour. of Med. and Surg. Montreal.
57. Maritime Med. News. Halifax.
58. Montreal Med. Jour.
59. Physician and Surgeon. Ann Arbor.
60. Wojenno med. Shurnal.
61. Australasian Med. Gazette. Sidney.
62. Bollettino. Florence.
63. Archiv. Ital. di Laryngol. Naples.
64. Riforma Medica. Naples.
65. Baltimore Med. Jour.
66. Louisville Med. Jour.
67. Clinical Jour. London.
68. Med. Record. New York.
69. Canadian Practitioner. Toronto.
70. Med. News. New York.
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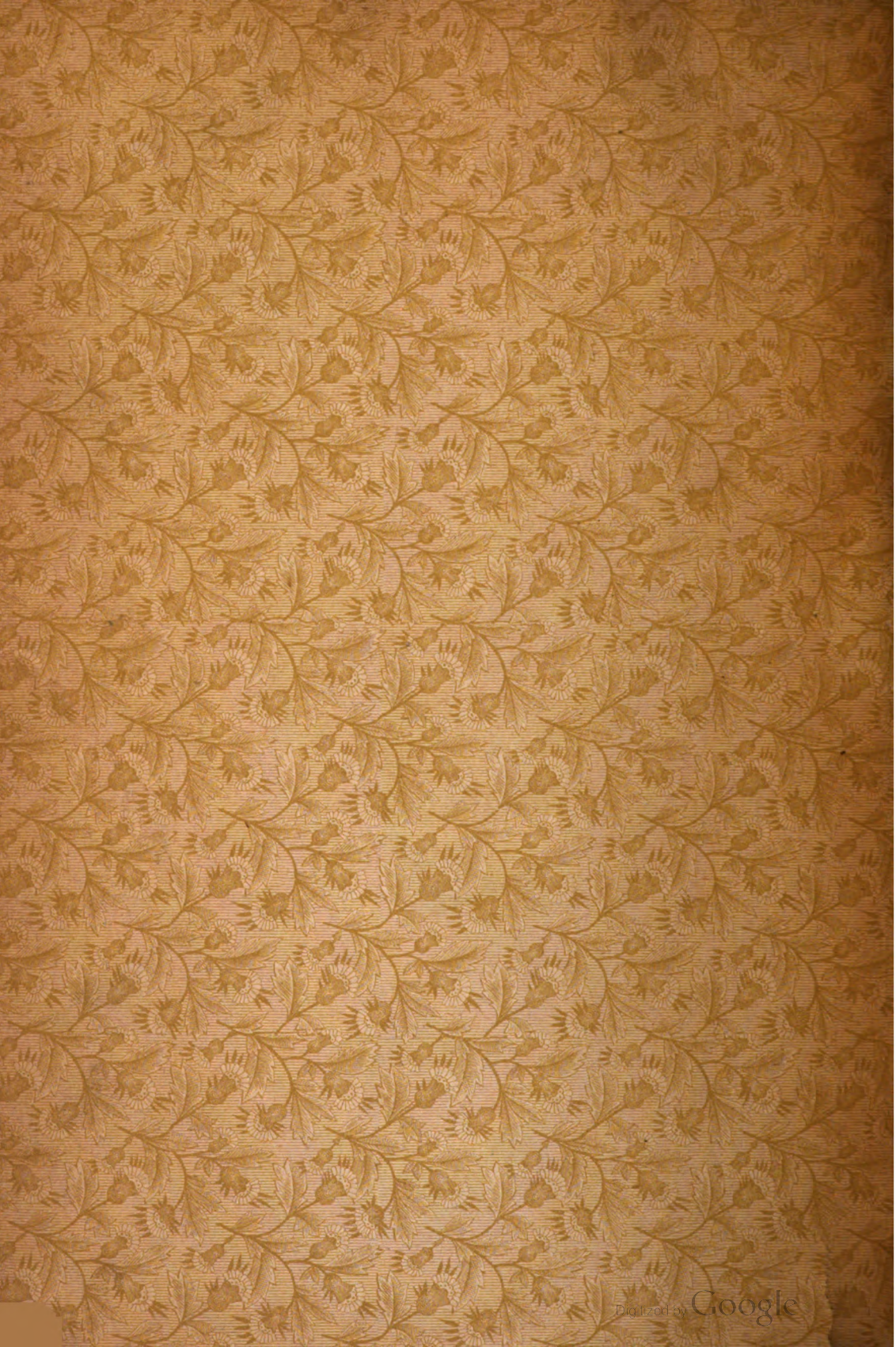
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